ETC.

A REVIEW OF GENERAL SEMANTICS

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A REVIEW OF GENERAL SEMANTICS

SCIENCE TEACHING AND THE HUMANITIES

PHILIPP FRANK

[FOREWORD *by* A. RAPOPORT: *The closeness of Dr. Frank's position, as it appears in the present article, to the point of view of general semantics is too evident to require elaborate comment. Stated in general semantics terminology, Dr. Frank's critique of our education and learning centers on its* elementalistic *character reflected in the rigid divisions between the 'special fields' of science and in the even more unfortunate chasm between the sciences and the humanities. A forest of ivory towers has arisen, and philosophy, shirking its modern social duty of providing means of communication between the towers of the 'special fields' and a bridge with the humanities, has instead gone into business for itself—that is, set up another tower.*

Dr. Frank realizes the need for a new orientation. *This orientation is to come through a close and critical scrutiny of the history of thought and of the methods of science. It is to come through considering science itself as a peculiar type of* orientation, *namely, one which enables us to predict and control some phenomena of nature. It is through this approach to his special science as a chapter in the book of Man that the science student can become 'humanized.' Philosophy really need not build the bridge between the sciences and the humanities. This bridge already exists in the view of man as a time-binder. Philosophy need only point to it.*

In showing how a philosophy of science may summarize scientific method, Dr. Frank describes among other things 'operational definitions.' Operational definitions are, of course, intimately connected with the 'extensionalization' and the 'criterion of predictability' of general semantics terminology. He introduces the connection between the symbolic postulation of Ohm's Law and reality by describing the relationship between the abstract terms of the physicist such as 'current,' 'resistance,' 'electromotive force,' and the 'everyday English' terms such as 'wire,' 'position of the needle,' etc. In general semantics terminology this translation is described as a descending order of abstraction, *hence as* extensionalization. *The criterion of predictability likewise plays an important part in these operational definitions. 'When the poles are connected, the needle* will *deflect so much. Then we say that an ampere of current is*

passing.' Or, 'when heat is applied, the gas will *expand so much. Then we say that the temperature has been raised one degree.' It is this constant reduction of scientific language to 'if thus, then so' propositions that makes science a unifying factor in human affairs, where metaphysics has so long been a dividing factor.*

Perhaps the most important of Dr. Frank's emphases is on the fact that there is no such thing as 'not having a philosophy.' The hard-boiled writers of 'practical' textbooks who maintain that they stick strictly to the facts, often exhibit a surprisingly soft-boiled, not to say addled, 'philosophy,' a metaphysics of tacit assumptions which they somehow somewhere have picked up. This is another way of recognizing that no matter what we say or how we say it, we do not speak 'facts' but rather describe our evaluations of facts, which are necessarily refracted in any metaphysics which happens to be lying around.

In the words of Poincaré, 'It is often said that experiments must be made without a preconceived idea. That is impossible. Not only would it make all experiment barren, but that would be attempted which could not be done. Every one carries in his mind his own conception of the world, of which he can not so easily rid himself. We must, for instance use language; and our language is made up only of preconceived ideas and cannot be otherwise. Only these are unconscious preconceived ideas, a thousand times more dangerous than the others.'

Finally, Dr. Frank shows how the symbolism *of the various 'integrative systems' are exploited by social, religious, and political groups to induce orientations in people which make them receptive to various patterns of propaganda. These observations are in our opinion of far-reaching significance. Their importance has not been generally recognized (probably because of insufficient interest in politics among philosophers) and certainly not sufficiently stressed. Just as Hitler exploited the frustrations under capitalist democracy in his bid for return to authoritative feudalism, so the reactionary religious and political groups are trying to exploit the dramatic failure of the mechanist-materialist world view (Newtonian) in a bid for return to aristotelian orientation. Dr. Frank pointedly connects the high incidence of conversions to fascism among engineers with their very poor contact with the humanistic aspects of science.*

It is indeed difficult to find a more brilliant illustration of the contrast between the static and the dynamic orientation, between the reactionary and the forward-looking, the aristotelian and the non-aristotelian point of view than in the respective attitudes toward an exploding 'system.' The reactionary says, 'What did I tell you? It was wrong all the time. Now we can go back to good old —ism.' The progressive or the general semanticist, having carefully dated his 'truths,' says of the dying system, 'Requiescat in pace. *It has served as it could. May the next one be short-lived.'*

Dr. Frank, lecturer on physics and mathematics at Harvard University, is author of Das Kausalgesetz und seine Grenzen *(1932),* La Fin de la Physique Mecaniste *(1936),* Rozvrat Mechanisticke Fysiky *(1938),* Interpretations and Misinterpretations of Modern Physics *(1938),* Between Physics and Philosophy *(1941),* Foundations of Physics *(1946), and associate editor of* Philosophy of Science. *His book,* Einstein, His Life and Times, *is scheduled for 1947. The present paper was given at the Seventh Conference on Science, Philosophy and Religion, University of Chicago, September 9-11.*]

THERE IS a widespread belief that the rising contempt for tolerance and peace is somehow related to the rising influence of scientific thought and the declining influence of ethics, religion and art as a guidance of human actions. This contention is, of course, debatable. There is hardly a doubt that the causes of war can be traced back quite frequently to religious or quasi-religious creeds and very rarely to the doctrines of science. The humanities, including religion and ethics, have been for centuries the basis of education and the result has been, conservatively speaking, no decline in the ferocity of men. The scientists have never had a chance to shape the mind of several generations. Therefore, it would be more just to attribute the failure of our institutions to educate a peace-loving generation to the failure of ethical and religious leaders than to construe a responsibility of the scientists.

I do not think, however, that it makes much sense to discuss the share of responsibility. For I agree fullheartedly with the critics of science in the belief that the training of generations of scientists in mere science without making them familiar with the world of human behavior, would be harmful to the cause of civilization. Whether we like it or not, scientists will participate more and more in the leadership of society in the future. Also there is hardly a doubt by now that the contributions of the scientists to our political life has been more on the side of peace and tolerance than the contributions of the students of law or government, or, for that matter, of philosophy proper.

In order to make this attitude of our leading scientists a habit among the rank and file, it is important to imbue the future worker in science with an interest in human problems during his training period. Since for this purpose it is futile to argue for the supremacy of humanistic education over science education, the debate 'science *versus* humanities' or *vice versa* is, of course, without point here. But it is also of little avail to compel the student of science to 'take' some courses in the departments of 'humanities.' According to the record of all people I know, the mentality of the average science student is such that he will not sufficiently appreciate these courses, and therefore not assimilate them well. What we actually need is to bridge the gap between science and humanities which has arisen and widened more and more during the nineteenth and twentieth centuries. According to my opinion, this can be done only by starting from *the human values which are intrinsic in science itself*. The instruction in science has to emphasize these values and convince the science students that *interest in humanities is the natural result of a thorough interest in science.*

In this way the science teacher will be giving his support to the whole cause of general education as well as to his specialized teaching of science.

Special Fields

Everyone who has ever tried to raise his voice for the cause of general education among the faculty members of a university has been running almost regularly against one very definite objection: whatever of their time the students have to spend in classes on general education they have to subtract from the time they devote to specialized work in their own scientific field. As this field is, in any case, so vast that it cannot be covered during their stay in college, it would be almost a crime to curtail this short and valuable time. This attitude is particularly strong among the teachers of science proper.

I am going to discuss the issue 'special field *versus* general education' mainly

from the viewpoint of science students. However, I am sure that the general picture will be about the same in any other field of study, in languages, in history, etc.

Besides this negative attitude of a great many scientists who warn us not to replace 'honest work by idle philosophical talk,' opposition to general education arises also from a group which one would hardly suspect of playing this role. The instruction in the 'special sciences' is, on the college level, regularly complemented by a 'department of philosophy' which has been supposed to emphasize human knowledge as a whole in contrast to the special types of knowledge furnished by the science departments. However, the departments of philosophy have not attended much to this great historic task. They have rather added a new specialty, technically called 'philosophy.' In this specialty the emphasis has been put not so much on the integration of the special sciences as on the creation of a technical language which is just as difficult to understand for, say, a student of biology, as the language of a special field of mathematical analysis. To an increasing degree the departments of philosophy have kept to a policy of 'isolationism.' Instead of working towards a synthesis of human knowledge they have proposed a kind of 'truce' between science and philosophy. In my opinion, this gap is greatly responsible for the rift in our general education, or, exactly speaking, the gap between science and philosophy is the most conspicuous part of the gap between science and the humanities—thus the gap between science and the realm of human behavior in general.

This gap is perhaps nowhere as clear cut and conspicuous as in the domain of physical science. Therefore, the battle for the renewal of liberal education will not be won without a willing and intensive cooperation of workers in the physical sciences. On the other hand, if we want the students of the humanities to go in gladly for general education which requires them to take in quite a few helpings of science, one has to convince them that by learning science they will also advance toward a better understanding of human behavior.

I am going, first, to describe what harm the rift between science and philosophy has done to both of these fields and to the cause of liberal education in general. Secondly, I am going to make some suggestions as to how this rift can be repaired by removing the causes through which philosophy and science have been estranged.

Physics and Philosophy

There is no doubt that the public interest in the physical sciences is primarily due to their technical applications: television, radar, the atomic bomb, etc. However, when Copernicus suggested description of the motion of the celestial bodies with respect to the sun rather than with respect to the earth, this suggestion was quite irrelevant for any technnical purpose. But the public interest and the heat of the debates were certainly greater in this than in the case of any new technical device. But we need not go back several centuries for examples, since we ourselves have been witnesses of the 'relativity boom' which arose when Einstein advanced his new theory of motion and light. Although this theory seemed at that time very far from any technical application, the public interest was in some cases rather hysterical, and there are examples of people who were almost killed in an attempt to get into an overcrowded lecture room where Einstein in person tried to put over Relativity to his audience. There

is also no doubt that the philosophical and even religious implications of such general physical doctrines account for the fact that quite a few clergymen have been eager to make use of Relativity in their sermons. In order to appreciate this situation correctly, we must not forget that Newton, during and after his lifetime, was a popular topic of parlor conversation and that many books popularizing Newton were published, some of them especially designed for 'the use of the ladies.'

Nowadays we find, not infrequently, books and magazine articles written by clergymen, philosophers, or, for that matter, by scientists, in which the theories of modern physics (relativity and quantum theory) are recommended for their philosophical or religious benefits. We learn from these papers that twentieth-century physics has 'restored' the place of 'mind' in the universe, that it has reconciled science with religion, and that the tide of materialism characteristic of eighteenth- and nineteenth-century science has definitely been broken in the twentieth century. As 'materialism' has always been connected with some political and social systems, these authors conclude that the new physics means also a defeat of all political systems based on materialism, by which they mean according to their personal bias, communism or, occasionally nazism (racism).

There is no doubt that the correlation between physics and philosophy has been largely responsible for the great interest in twentieth-century physics in wide sections of the general public. The intelligent reader who follows the trend of contemporary thought in books and magazines, who listens to popular lectures of scientists, preachers, philosophers and global politicians, would often have a greater interest in the general ideas of twentieth-century physics than an average student of physics who specializes, say, in 'radar.' Even after graduation, a student of physics usually knows very little about the relation between physics and philosophy, let alone between physics and human behavior. He is generally less trained than the educated layman in well-balanced judgment about such problems as are daily discussed in magazines and lectures about the influence of modern physics on human affairs. If a student in high school or, for that matter, in most colleges, asks his physics teacher for information about problems of this kind, he will hardly get a satisfactory answer. The information, if any, will mostly be perfunctory and evasive. Therefore, the graduates in physics will rarely be able to advise the general public on questions which this public regards as relevant for their general outlook on man and the universe.

This failure of the learned physicist will not stifle the public interest. The thirst for knowledge which is not quenched by the scientists will be allayed by people who are ignorant in science but know how to give answers which flatter the wishes of the majority of people. Thus the longing for knowledge of large sections of the public will become grist for the mills of some organized propaganda groups.

The reason why the average teacher of physics is not able to give any adequate answer to these questions is obvious. The traditional teaching of physics fails to pay enough attention to the precise relation between the observed facts and the most general laws of nature. While the language of these general laws contains words like 'entropy,' 'relativity,' etc., the language by which observed facts are described is exactly the language of our everyday life. It contains expressions like

'red spot,' 'hard stone,' 'increasing heat,' etc. The failure to explain adequately the relation between these two types of expressions accounts for a great many shortcomings in our general education. For, to understand precisely the meaning of the general laws of science is the natural starting point for an understanding of the laws of human behavior. As these laws are much more complex, the analysis of science can serve fittingly as the first step towards the understanding of social relations—as long as this purpose is not frustrated by oversimplification and complacency which are so current in the traditional teaching of the fundamentals of science. In order to convince ourselves of the latter fact, we need only look at random into some elementary textbooks of, say, physics, and examine how they present a simple and familiar law, as for example, the law of inertia.

One author may call it 'describing a familiar fact of our daily experience proved by a book lying quietly on the table,' while the next textbook says that this law cannot be checked by any experience. The approach to general laws in advanced textbooks is equally perfunctory except that the lack of precision is hidden under a heavy load of mathematical formulae. In most textbooks the law of inertia is formulated by a proposition which is void of any physical meaning. We read 'if no force is acting on a body, it is moving along a straight line,' without the slightest hint to which system of reference the expression 'moving along a straight line' refers. The confusion inherent in this traditional formulation becomes conspicuous when the text tries to comment on the 'centrifugal force.'

These textbooks mostly claim to 'stick to the facts' and to exclude 'idle philosophical talk.' But actually, they formulate the laws of nature in such a way that no physical facts whatsoever can be logically derived from these laws. This means that they actually formulate not physical but purely metaphysical laws.

Thus, the physical sciences provide very good examples from which the students can learn that the expression 'sticking to the facts only' is frequently used as a pretext for 'avoiding all logical analysis,' and therefore 'favoring all kinds of obsolete prejudices.' What one should reasonably mean by 'sticking to the facts only,' is to make only statements which can be checked by experience, *i.e.*, by observable facts. This habit is certainly of great use in debunking empty slogans and bigotry in politics or religion.

This issue can, for example, be brought home to the students very effectively by presenting to them in an adequate way the conflict between the Copernican world system and the older Ptolemaic system. They would learn, then, that the adherents of the old geocentric system that had the backing of the Church regarded their system as a description of sense-observation, as a 'sticking to the fact only,' in contrast to the Copernican heliocentric system which was, according to them, 'an artificial construct and contradictory to the testimony of our senses and even to common sense.'

The same failure to grasp the real relation between sense observation and mathematical construction has led frequently to a misunderstanding of such important developments in science as non-euclidean geometry. The great majority of the graduates in mathematics, even in good colleges, have never given even a thought to the question what the observable world would look like if non-euclidean geometry were correct and even what it means precisely to say that non-euclidean geometry is valid or is not in our physical world. The bulk of the students have never even

heard of such a question, as the traditional teaching of mathematics ignores the exact relation between physical facts and mathematical conclusion.

As 'sticking to the facts' is the slogan of traditional physics teaching, 'ignoring the facts' is a slogan cultivated in the traditional teaching of mathematics. Both these slogans are logically legitimate within a restricted domain of thought. However, on occasion, the students have to learn the limitations of these slogans; otherwise, the meaning of the most important laws of nature cannot be made clear to them, and the very goal of general education on the basis of science would be frustrated.

If no bridge is built between the traditional teaching of physics and mathematics, students never get an understanding of such an important subject as non-euclidean geometry, let alone the theory of relativity. The physics of the twentieth century will remain to them a domain full of fog and mystery with only some dispersed islands of clear visibility.

Chance Philosophies

Without understanding the tie up between mathematics and physics, the student misses the best opportunity of grasping the most important trait of human knowledge: the relation between sense observation and logical thinking. If this bridge between the fields is not built by a thorough analysis of the empirical and logical procedure in science, that is, by a systematic philosophy of science, the necessity for this bridge is so overwhelming that it will be built anyway. This will be done mainly by some obsolete but popular philosophy which will replace the thoroughly logical analysis of science. It is noteworthy that, in practice, crude empiricism in science, without critical analysis, has often made possible the flourishing of crude metaphysical systems.

Quite a few great thinkers who belonged to very divergent schools of thought have been unanimous on one point: if a scientist believes that he has no philosophy and keeps tightly to his 'special field' he will really join some 'chance philosophy,' as A. N. Whitehead puts it. This great contemporary metaphysician with a solid scientific background assures us that for a scientist deliberately to neglect philosophy 'is to assume the correctness of the chance philosophic prejudices imbibed from a nurse or a schoolmaster or current modes of expression.'

We find complete agreement with this opinion in a statement of Ernst Mach, a philosopher and eminent scientist who was the most radical enemy of all kinds of metaphysics. He says, about obsolete doctrines of philosophers, that they 'have survived, ocasionally, much longer within science where they did not meet such an attentive criticism. As a species of animals which has been badly adjusted to the struggle of life has survived sometimes on a remote island where there have been no enemies, obsolete philosophy has survived within the borders of science.'

As a third and again very different type of thinker we may quote Friedrich Engels, (the life-long collaborator of Karl Marx), who was particularly interested in the consequences of obsolete philosophy in social and political life. He says: 'However the scientists may try to avoid it, they will be always directed by the philosophers. The question is only whether they prefer to be directed by some poor philosophy which is just fashionable or by the diversity of theoretical thoughts which they would learn by acquaintance with the history of thought and its achievement' (*Dialectics of Nature*).

One thing seems to be certain: if we

try to eliminate from, say, physics, teaching all philosophy of science, the result will not be a crop of 'scientifically minded' physicists, but a flock of believers in some fashionable or obsolete chance philosophy.

This fact becomes evident if we cast a casual glance into any textbook of college physics. If one reads the 'introduction' one notices in quite a few cases that some kind of 'philosophy' is taken for granted. Frequently one meets statements like this: 'Science has "involved" that there are only two "entities" in nature—matter and energy—but some scientists think that there is still a third entity—electricity.' Words like 'entity' have a status neither in our every day language nor in the language of physics but are reminiscences from mediaeval philosophy. If they turn up without the context of that system they are completely meaningless and have only a confusing effect on the reader.

Usually the student and, for that matter, the teacher of physics, pays little, if any, attention to this 'philosophical introduction.' If one ventures criticism the most frequent apology would be that nobody reads it anway, let alone takes it seriously. But this seems to be a rather poor justification of a doctrine presented in a textbook of science. These perfunctory introductions do, certainly, no serious harm to the physicist in his business of handling the usual devices and predicting the outcome of the well-known experiments under normal circumstances. But if a non-physicist reads a physics textbook with the intention of profiting his own general education, he would usually believe that every word in this textbook is a result of physical science. In this way, some doctrines of ancient philosophy (like the existence of a finite number of entities in the world) which have been dropped for a long time from scientific philosophy, get the blessing of modern physical science. Then such a statement boomerangs back to the physicist as a statement of contemporary philosophy and bars the worker in physics from any contact with living philosophy. In turn, the chance philosophy which the authors of physics textbooks have absorbed from some obscure source, boomerangs back to the students of philosophy as the last word in contemporary science.

Among the science students the students of engineering are those who get traditionally the worst training in philosophical analysis. They often absorb science stripped of its logical structure as a mere collection of useful recipes. Is it a mere coincidence that the students of engineering have on the whole been more impressed by empty political slogans (like Fascism) than the students of 'pure' science? There is no doubt that general slogans play in politics a role similar to that general principles play in science. If someone is trained to understand to what degree general principles like 'conservation of energy' or 'relativity' are based on confirmable facts and how far on arbitrariness and imagination, he is more immune against the political slogans of demagogues than a student who has been trained only in recording his immediate experience and to regard the general laws as gifts dropped from heaven for helping him to bring some order into his record sheet.

The traditional method of physics teaching of 'sticking to the facts' and 'avoiding philosophical talking,' breaks down conspicuously in the attempts to teach Relativity Theory and Quantum Theory according to these slogans. The failure to discuss these theories from the philosophical angle is responsible for the awkward situation that even at present most of the graduates in physics regard the theory of relativity as a doctrine which

is somehow obscure if we compare it with the proverbial lucidity of, say, Newton's Mechanics or Maxwell's Theory of the Electro-magnetic Field. Quantum Theory is even at present mostly taught as a recipe for some formulae. Quite a few instructors attempt to hurry as quickly as possible through the foundations of Quantum Theory in order to protect the minds of the students from conceptual difficulties and obscurities. They want to reach as soon as possible the safe ground of familiar computation and experimentation on special problems where 'honest work' can be done. By this presentation it happens quite frequently that the student gets only a vague knowledge of important ideas such as Heisenberg's Principle of Uncertainty and Bohr's Principle of Complementarity. In this way the student misses just the points which are of the greatest interest for people who are not professional physicists. The purging of physics from philosophical discourse has become, in quite a few cases, a pet slogan in physics teaching. However, this discrimination between physics and philosophy has been quite unknown to men like Galileo and Newton or, for that matter, to Aristotle. In the famed conflict between Copernicus and the doctrine of the Church, philosophers and scientists disagreed often, but they never challenged their mutual competence to discuss this issue, as a common issue of science and philosophy. The discussion on Einstein's Theory of Relativity has been, from the logical point of view, largely a repetition of the discussion on Copernicus. But there is little doubt that the philosophical part of this discussion of the twentieth century has been much more confused than the above mentioned discussion in the sixteenth and seventeenth centuries. For nowadays, there is no longer any common ground which is accepted by both parties, scientists and philosophers. This separation has been growing more and more during the nineteenth century, particularly due to the influence of German idealism with its sharp distinction between empirical and transcendental knowledge or between 'pure' and 'practical' reason.

Practically, the separation between science and philosophy can be kept up strictly only during a period in which no essential changes in the principles of science take place. In a period of revolutionary changes the walls of separation break down. In Whitehead's statement quoted above, he makes particularly the point that the lack of a philosophy of physics among the physicists may be harmless in a time of stability, but during a period of reformation of ideas this lack will lead unavoidably to the chance philosophy of which we spoke. Our own age with the rise of Relativity Theory and Quantum Theory is an obvious example. These new fields have actually become, not only for the layman but also for the physicist of average training, a kind of mystery. We find this feeling well described in the autobiography of H. G. Wells, who has been particularly prominent in the field of science fiction. He tells us about his impression as a physics student in the Imperial College in London: 'All went well in the customary space-time frame work. Then things became difficult . . . . Beyond what were the empirical practical truths of the conservation of energy, the indestructibility of matter and force, etc., hung an enigmatic fog. A material and experimental metaphysics was reached.'

There are different methods which have been used by physics teachers to dodge the issue of giving to the students a coherent picture of the laws of nature. The simplest thing to do is to stick as tightly as possible to the description of physical devices and to the presentation of mathematical com-

putations. This way of teaching has given to the non-physicist the impression that the science of physics, which has been, historically, the spearhead of enlightenment, has become in some cases a source of obscurantism. Quite frequently physics was actually used to attack the belief in human reason and to bolster the belief in irrational sources of truth. This misuse had its basis certainly in the failure of many books and instructors to give a logically consistent interpretation of the physical meaning of the formulae which express the most general laws.

The Department of 'Philosophy'

Besides the departments of the 'special sciences' there is in most colleges a department of 'philosophy' which is to counteract the extreme specialization. It is devoted to the task of investigating the foundations that are common to all the special sciences. According to our previous argument, the average instruction in the 'special sciences' has not achieved the goal of giving to the student an understanding of what is the place of his science in the whole of human knowledge and human life. Let us now inquire how the average instruction in philosophy has done the job which has been ignored by the instruction in the 'special sciences.' As a matter of fact, philosophy (as taught in most departments of philosophy) has become a special science itself which is more separated from mathematics, physics, biology, etc., than these branches are separated among themselves. The width of the gap that has separated science from philosophy became noticeable when the rise of completely new theories like the theory of relativity produced a confused situation among the scientists. The contribution of the philosophers trained in their special field towards a clarification of the new concepts and their integration into the whole system of our knowledge has been all but negligible. The students of philosophy trained in the traditional way have mostly studied the theory of relativity and quantum theory from superficial popularizations which were written by 'physicists' who, in turn, had no training whatsoever in the logical analysis and philosophy of science. Therefore, their popular writing is imbued with their 'chance philosophy' which they have picked up somehow. Concepts like space, time, causality are used according to these 'chance philosophies.' In this way, again their own traditional and sometimes obsolete philosophy has been returned to the philosophers in the disguise of the gospel of 'science.'

To get an estimation of the width and the depth of the abyss we have mentioned again and again, we have only to make an attempt to locate a philosopher who has a 'clear and distinct idea,' say, of the real issue in the old conflict between Copernicus and the Roman Church, let alone of the conflict between the Newtonians and Einstein. We would find very few. But it seems obvious that nobody can grasp the philosophical meaning of an issue in the history of human thought if he does not understand the issue itself, and by 'understand,' I mean 'thoroughly understand.'

Among the philosophers the apology is current that it is just impossible for them to have an exact insight into a scientific issue because the sciences have become, in our time, so highly specialized that only the specialist can have a thorough understanding. But if this is so, how again can one have a philosophical judgment about an issue which one understands only superficially because the matter is too complicated? In this situation a great many philosophers have chosen to establish as their 'redoubt' a special field

of philosophy outside the field of science. To master this field one supposedly needs only an acquaintance with the pre-scientific knowledge which is familiar to the 'man in the street.' According to this program of action, the philosopher investigates the concepts and beliefs that are the logical basis from which the experience of our every-day life can be derived. On this level we make free use of words like 'time,' 'space,' 'existence of external objects,' etc., in the sense in which the 'man in the street' uses these expressions. The 'special sciences' like mathematics, physics, biology, etc., as isolated branches of knowledge, are taken for granted and the policy of non-intervention is upheld. These 'recognized special sciences' have been born somehow. They thrive happily without bothering about philosophical analysis. The philosopher wants them to be happy in their innocence and not to intrude into his 'living space' which is located 'between' and 'above' and 'below' the domain of these isolated special sciences.

Actually, these autonomous sciences exist only in the oversimplified scheme set up by a large group of philosophers. The domain between mathematics, physics, biology, history, etc., is exactly of the same stuff and has exactly the same logical structure as the domain within physics or within mathematics. The borderlines between the special sciences are drawn only for the sake of the division of labor and not for any profound philosophical reasons. The special fields of physics and chemistry were regarded through centuries as being of an essentially different nature since physics has to do only with quantitative changes while chemistry inquires qualitative or even substantial changes. Today we have between physics and chemistry two new 'special fields,' physical chemistry and chemical physics which replace the 'mysterious something' which was supposed to be the 'philosopical link' between physics and chemistry.

The schools of thought which have advocated the separation of philosophy from science have certainly tended to cooperate in the integration of the sciences, but they perform this job by using as binding material some pre-scientific stuff, while we learn from our last example that the binding material between the 'special sciences' is itself a full-fledged science. But another school of thought, which claims to be very up-to-date takes an attitude which we may call an attitude of defeatism. They leave the 'special sciences' untouched and autonomous. But according to this school, philosophy does not even attempt to fill the gaps between these special sciences but plans to build up a completely separated stratum of knowledge 'beyond science.' This 'knowledge' is claimed to be completely independent of any advance of science proper, for it is based only on the pre-scientific experience of mankind. We may distinguish two groups within this school.

Both insist that when the scientist has done his job as thoroughly as he can, the philosopher's job begins. When, *e.g.*, the physical laws of motion are established by the scientist, the philosopher, says the first group, steps in and puts his particular questions. The scientist has formulated by his law *how* motion takes place, what it is like, etc. But the philosopher wants to know what motion *is*, with the emphasis on the 'is.' While the scientist explores the observable attribute of motion, the philosopher wants to find out the 'being,' the 'essence' of motion. This essence of motion can be discovered on the basis of our pre-scientific knowledge about motion and cannot be affected by any further advance in our science of mechanics. To this group belongs present-day Neo-Thomism.

The second group starts also from the 'special sciences' as having accomplished their job. But instead of looking for the 'being' of things this group claims that these 'special sciences' take some 'presuppositions' for granted without investigation, *e.g.*, the existence of material bodies, the law of causality, the law of induction, etc. Then they say the philosopher has to step in and investigate whether these presuppositions are correct or not. When I hear this claim, I have sometimes the feeling that the shoe may be on the other foot. For quite frequently scientists investigate the presuppositions which philosophers have taken for granted without investigation. The founders of non-euclidean geometry, Gauss, Lobatchevski and Bolyai, doubted the axioms of euclidean geometry. Einstein doubted the axioms of newtonian mechanics, while a great many philosophers believed in these axioms as eternal truths. Moreover, it is quite debatable whether 'presuppositions' like the existence of material bodies, really play any role in science and whether presuppositions which play a substantial role can be investigated by any method which is not scientific itself. Whatever may be our final judgment about this 'investigation of presuppositions,' the practical effect of this philosophical school is again the establishment of philosophy as a special science besides mathematics, physics, economics, etc.:—and the perpetuation of a wide gap between science and the humanities in our educational system.

The role of philosophy as an integration of human knowledge is ignored, or, at least, neglected and, as a result of it, the educational values intrinsic in mathematics, physics, etc., are not exploited. These special sciences are reduced to the state of useful knowledge without truth value while, on the other hand, 'philosophy' becomes a type of discourse without contact with the advance of science and, therefore, without contact with the evolution of human intellect.

From these considerations, it seems obvious that the traditional teaching of philosophy may have contributed considerably toward sharpening the thinking of students and toward giving them a certain touch of sophistication, but has certainly made little contribution toward the synthesis of human knowledge which should be the chief goal of liberal education.

Philosophy of Science

If we look for a constructive plan for bridging the gap between science and philosophy and, as a result, between science and the humanities, we have to remove the chief obstacles blocking the way toward this goal. As we have learned, the two principal obstacles are, first, the exaggerated belief of scientists in specialization which sometimes leads even to a prejudice against general ideas and, secondly, the recent tendency of the schools of philosophy to establish 'philosophy' as a new 'special science' instead of working on the synthesis of knowledge.

The negative attitude of many scientists is based on their conviction that every trespassing beyond the limits of one's own field would lead to unavoidable superficiality. Therefore, the genuine scientist has to mind his own business and keep within the fences of his own department. There is, of course, a grain of truth in this argument of avoiding superficiality. However, it does give only one side of the picture, for the advance of science has not only revealed more and more complexities in science; but also more and more cross-connections between the 'isolated' special branches. By this fact it has become much easier than formerly for one

man to grasp the findings of several special fields. We have only to consider the example of physics and chemistry.

If we want to get a sound judgment of how, despite the abundance of factual material, to acquire a thorough knowledge across departmental lines, we have to ask, for example, how some people have managed to become experts in a field like biophysics. They did it, certainly, not by a thorough study of the whole of physics plus the whole of biology. For this cannot be achieved in one lifetime. Those men acquired a balanced survey knowledge in both fields, physics and biology, and tried to acquire a really thorough knowledge in those parts of physics and biology which are relevant for the interaction of the phenomena of life with physical phenomena. As a matter of fact, the behavior of the scientists who have worked within a traditional field like physics has not been different. An average physicist will acquire a survey in general physics and a detailed acquaintance with his special field within physics. If he wants to become a biophysicist his survey information has to be broader, but his field of special interest need not be larger than the special field of an ordinary physicist. Sincerely speaking, the average physicist learns some part of physics outside his special field only through popular generalizations. This is true frequently for the Theory of Relativity. The individual physicist is, of course, not to blame for this situation, for without using popularizations, he would not be able to get any information about important fields of his science.

From these remarks it becomes obvious what has to be the training of the 'philosopher of science' if he goes in for a synthesis of human knowledge as his goal. He has to acquire a survey knowledge of several sciences and a thorough and precise knowledge of those parts of each special field which are relevant for the relations across the borderlines and for the relation between sciences and human behavior.

Some people may object that a survey knowledge would not be sufficient, for one cannot know what part of science will be relevant for the purpose of philosophy before the integration has been actually achieved. There may be some truth in this argument, but it proves too much. For according to this argument, every physicist would have had to have a thorough knowledge of the whole of physics. For otherwise he cannot know what knowledge may be relevant for his special field of physics. Nothing can be done about it and he has just to take the risk in his training as a physicist. He will learn by and by to smell what is relevant and what is not. No greater effort is, in principle, required from the philosopher who wants to acquire a training in the philosophy of science. There is no doubt, however, that even a survey knowledge in the sciences will take him so much of his time that he will not be able to get the training which a philosopher has to get if he goes into 'philosophy as a special science.'

But it may be sufficient for a student who specializes in the philosophy of science and wants to take his Ph.D. in philosophy to get along with a survey knowledge in the history of philosophy, without learning the details of all opinions which have been uttered through two or three thousand years. Every philosopher of science should, of course, be familiar with the ideas of the great thinkers like Plato, Aristotle, Thomas Aquinas, Leibnitz, Descartes, Kant, Nietzsche, etc. But it is perhaps sufficient if this special candidate becomes familiar with the language of these men and knows how to locate their ideas within the great stream of the evolution of scientific thought. This

would leave him time and, more important, the leisure to acquire a good survey in the physical and biological sciences. He would concentrate his effort on those parts of these sciences which are the most relevant for judging the borderline problems arising between the special sciences and between science and traditional philosophy. He would concentrate, for instance, in mathematics on problems like the 'truth of non-euclidean geometry,' in mechanics on the role of 'absolute motion,' and, in particular, on the ties between mathematics and physics, *e.g.,* the distinction between mathematical and physical truth of geometrical axioms. He would, of course, try to acquire a thorough understanding of Einstein's theory of relativity, of Heisenberg's principles of uncertainty, of Bohr's complementary concept of nature, etc. In traditional philosophy he would try to understand the approaches of different schools to the question of what is the precise borderline between physics and philosophy. He would try to learn the answer of the great philosophers to questions like: what is the logical status of the general laws of nature? Are they a result of experience or of reason or of what? What is the role of chance and of causality in the general laws of nature and in their application to observed phenomena?

Teachers of philosophy with a similar type of training could give to the students reliable information abouf the problems of the 'philosophy of science' and of the 'integration of sciences.'

But then we are confronted by a further task: If we know even the problems, do we know also the solutions? What should we present to the student as the result of the integration of science? One should give him reliable guidance without providing him with a 'chance philosophy' which may be either the result of an old and now obsolete tradition or just the fashion of a year and a certain social group.

Neo-Thomism and Dialectical Materialism

There is a suggestion which has been widely discussed during the past years: the ideas of Robert M. Hutchins, Chancellor of University of Chicago. The essential point of his thesis is that we have to base the integration of knowledge taught in our colleges on the last available synthesis in the history of thought, on a kind of 'standard-tradition.' According to this group, the spokesman of which has been the philosopher Mortimer J. Adler, the last system in history which has really achieved a synthesis of science, ethics, politics and religion is the philosophy of St. Thomas Aquinas. His *Summa Theologiae* and his *Summa Catholicae Fidei contra Gentiles* present a coherent system in which, from the same set of principles, not only astronomy, psychology, ethics and politics are derived logically, but also the behavior of the angels, *e.g.,* the speed of their flight.

It seems, of course, debatable whether actually Thomism is the last coherent system which has attempted or achieved such a sweeping synthesis. Some people would, certainly, claim that the philosophy of Dialectical Materialism which is the official basis of education in the Soviet Union is just as well a set of principles from which not only physical science is derived, but also the laws of history and sociology. Just as well as Thomism this more recent system claims to give guidance not only in scientific research, but also in the question of what is a 'good life.'

The basic contention of Hutchins and his group is that a synthesis which may not be perfect is preferable to no coherent synthesis at all. There is no doubt that it

is the chief asset of Thomism that such distant subjects as astronomy and theology can be regarded as conclusions from one and the same set of principles. But if we disregarded, for example, theology, there would be hardly anyone who would claim that Thomism is a good system from which to derive an answer to the question whether the newtonian or einsteinian mechanics is preferable.

In the same way, the chief asset of Dialectical Materialism is the fact that the laws of physics are derived from the same principles as the laws of human societies. We learn from the textbooks of Dialetical Materialism that, for instance, the law of the transition of a capitalistic society into a communistic one follows from the same principle as the transition of water into steam. Both are conclusions drawn from the dialectical principle that quantitative changes eventually become qualitative changes. But if we are not interested in the synthesis of physics and sociology into one set of principles, hardly anyone would claim that Dialetical Materialism is the best foundation of physical science, for example, the most helpful interpretation of the evaporation of liquids.

Dialectical Materialism has, as a matter of fact, nowhere been chosen as a basis of education except in countries where the government has been committed to Marxist economic and political principles. In this case, there is clear advantage in having these principles linked up with the laws of physical science by a common set of principles. With the same right we can assume that Thomism is not commendable as a basis of education except where the government is committed to the political and religious doctrine of the Catholic Church. For it will enlist science by regarding science, politics and religion as derived from common principles.

There is, on the other hand, no doubt that in an education which emphasizes the integration of human knowledge, much more attention than usual should be given to the systems which historically have performed such an integration, however we may judge the actual political and religious way of life which is coherent with this system. The student should get a good and unbiased presentation of Thomism as well as of Dialectical Materialism in their function as a synthesis of human knowledge. But to make either of these systems the main or exclusive basis of education in the philosophy of science can be justified only if a particular political and religious indoctrination is intended.

Logico-Empirical Analysis

Despite all these considerations there is some sound nucleus in the plan to use a historic philosophical system as a system of reference. There is no doubt that the integration of knowledge on the college level can be promoted among the students only by the use of philosophical and historical argument. However, the starting point has to be living science itself. Philosophical and historical discourse must emanate from this source. There are quite a few good reasons for this, but it may be sufficient to consider the practical reason that in no other way can philosophy and history be made palatable to the student of science, and he will fail to appreciate this unusual food if he has no appetite for philosophical and historical ideas. It would be, of course, a poor teaching method just to add to the traditional presentation of science some philosophical spice or sauce. We have rather to give to the presentation of science itself a philosophical touch.

The teacher of the special sciences will perhaps be afraid lest time would be wasted by such a treatment. The student

would pay for this 'philosophical and historical touch' by a deficiency of information in science proper. But it seems to me that this new approach will rather save time. For by this method a great many laws of physics, *e.g.*, could be much more attractively presented to the students than by traditional methods. However, I do not mean that the approach should be made by one of the numerous metaphysical systems which have been invented during the ages for the purpose of an integration of human knowledge. Every attempt of this kind would introduce very questionable doctrines into the teaching of science and would lead to disaster. We have to make use of the philosophical argument which has grown up on the soil of science and has been fed with the blood of science. We must never forget that metaphysics divides people and science unites them.

If we try to build the bridge between science and philosophy, our first step will be to present to the students their own 'special science' as a chapter in the book of human knowledge. Every scientist is confronted with the amazing fact that it is possible to derive from a few simple principles by means of logical argument a wide range of facts which can be checked by actual observations. The existence of these principles allows us to put the phenomena of nature into our service, for they enable us to construct methods by which the outcomes of physical processes can be predicted from the start.

Philosophy of science is concerned with the nature of this method or device which man has invented in order to bring about the prediction of physical phenomena. To have a certain understanding of this device is a basic requirement for everyone who wants to understand the history and the behavior of mankind in the past centuries including our own. Everyone who has given but a little thought to this question will agree that the science student who has received the average training has but a very vague understanding about the function of this 'device.' This failure accounts for the devastating misinterpretations which twentieth-century science has met among scientists themselves as well as among 'educated' laymen. It has certainly been, conservatively speaking, puzzling for the truth-seeking student of science to learn from reputable science books, for instance, that Einstein has been able to explain some physical phenomena through profound insight into the nature of space and time or that he proved some physical law by a purely mathematical demonstration. For neither a reasonable scientist, nor, for that matter, a non-scientist will ever understand how the 'nature of space and time,' an obscure combination of words, can be the cause of observable facts. He will grasp still less how by a mathematical demonstration a physical fact can be proved. We can read quite frequently in books of good standing as standards in these questions go, that atomic physics gives us a new insight into the 'freedom of will,' although this expression has no meaning in terms of physics at all.

Briefly, the field between physics and philosophy is and has been a no man's land where mysterious beings are at large. Scientists who are very conscientious and consistent in their special field are prone to the wildest utterances when speaking about a problem which belongs to the domain of philosophy of science.

It has been an age-old dilemma whether the general laws of science are a result of reasoning or of experience. If they are a result of pure reasoning how can they predict observable facts in the external physical world? But if they are a result of experience only, how can they

allow a prediction of the future, since experience gives only a recording of past events? In our twentieth century, the belief that pure reason can prove physical principles has been exposed, as well as the belief that pure experience can set up general laws, like Newton's Law of Gravitation or the Law of Inertia. Both beliefs have given way more and more to an approach which is known as the 'logico-empirical analysis of science,' which is recognized in practice by all theoretically-minded physicists and by a great many biologists, psychologists and sociologists, as the correct analysis of modern science. Logico-empirical analysis was the method by which the revolutionary theories of modern physics were set up (Theory of Relativity and Quantum Theory.) This type of analysis has been characteristic for the science of our twentieth century.

There have been approaches from different angles which have worked out in the same way. Several rivers came from different sources to open into the sea of logico-empirical analysis. This analysis has very different shades according to the background and the national and professional heritage and the author. For instance, we may consider on the one hand P. W. Bridgman's *Logic of Modern Physics,* with his emphasis on the 'operational meaning of propositions.' His system of reference was the hard facts of the laboratory. On the other hand, we have a man like the French philosopher G. Bachelard with a good background of physics, who called the new orientation 'non-cartesian epistemology.' His system of reference was the historic presentations of science by the great European thinkers.

Through the work of all these men a common attitude has developed, or as P. W. Bridgman would like to say, a common program of action. It certainly would not be recognized by everybody as leading to the 'ultimate truth,' but by all scientists and most philosophers as being the first step to truth about science.

To give a perfunctory outline of what logico-empirical analysis stands for, it may be the best thing to remember old David Hume's assertion that there are only two types of legitimate statements in science. Either a statement is a description of facts in terms of observational sentences or it is a mathematical or logical conclusion. 'Science' is a free creation of the human mind which is designed to predict and to master the observable phenomena. More specifically speaking, the device called 'science' consists of three kinds of propositions. We have first, the general principles of science. They are formulated, *e.g.,* in physics, in abstract terms like 'mass,' 'force,' 'electric charge,' etc., in geometry in words like 'straight line,' 'point,' 'intersect,' etc. Secondly, we have the rules of logic and mathematics which tell us what conclusions you can draw from the principles without knowing their meaning. If we consider a 'principle,' *e.g.,* 'intensity of a current is equal electromotive force divided by resistance' ($I = E/R$), we can conclude from the mathematical and logical rules that $E = RI$ without knowing what the words 'electric current,' etc., and the symbols I, E, R, actually mean.

Neither the physical laws nor the mathematical rules have any connection with observable phenomena. To make them statements about observable facts we have to introduce a third group of sentences into our system of science. The sentences have to describe, *e.g.,* what experimental operations we have to perform in order to make sure whether a certain 'intensity of current I' exists in a certain wire. These sentences contain the abstract words of the physical prin-

ciples like 'current' or symbols like 'I,' but also the words of the everyday English language. Obviously, they contain words like 'wire' and other words which describe the apparatus and the operations performed with the apparatus by which the intensity of a current is actually measured.

Such a sentence or group of sentences is called by P. W. Bridgman the operational definition of the word 'current I.' Or, he says that the word current gets an 'operational meaning' by these sentences. By other authors these sentences are called 'semantical rules.' The art to find and to handle such rules in any discourse is called by these authors 'semantics.'[1]

By means of these 'operational definitions' we can translate the terms and symbols of the physical laws (electric current, I E R, etc.) into expressions of ordinary English. If we substitute these expressions in the principles they are no longer relations between symbols without any bearing on the observable world, but they become statements which contain only words of the language of our daily life and, at that, words describing observable facts. In this way the principles themselves become statements about observable phenomena. We can say that these principles become now 'physical hypotheses' which can be checked by actual physical experiments. The statement $E = RI$, *e.g.*, is by itself a relation between symbols, but if we add the operational definitions of E, I and R, we know by what physical operations we can measure the intensity, the electromotive force and the resistance in a wire. Then the relation $E = RI$ becomes a relation between the result of actual measurements, and we can check whether this relation is in agreement with our observations or not.

We see now that a physical theory consists of principles expressed in terms of symbols plus mathematical rules plus operational definitions. Only all these parts together define a physical hypothesis and can be checked by experiments.

Perhaps the most important philosophical contribution of the logico-empirical analysis has been to make clear that a set of principles by itself is no theory since it cannot be checked by experiments. Only principles plus operational definitions constitute a theory. This means that no principle or system of principles can be confirmed or refuted by actual observation or that no system of principles can be called 'true' or 'false' by itself. It can only be called 'true in connection with a specific set of operational definitions of the symbols.'

By this analysis of a theory, a great many empty questions are eliminated. We find, *e.g.*, in many books, even written by scientists, statements like this: 'This table is only apparently a solid piece of wood, but in reality, it consists of billions of small electrons and protons.' As no operational definition of the terms 'reality' and 'apparently' is given, this statement is void of meaning. If, however, such a definition is given, the statement becomes trivial and may just mean that from the description of the atomic constitution of a table you can draw more conclusions than from the simple statement that it is a solid piece of wood.

By this type of analysis many pseudo-questions disappear which have confused scientists and laymen alike. Into this category belong questions like this: Does 'electricity' ultimately consist of electric charges or of an electric field? If we discuss mechanics, does the reality consist

[1] See also the discussion of Operational Definitions in A. Rapoport, 'Semantic Aspects of Language and Mathematics,' *ETC.*, II, 106-115 (Winter 1946).

only of the motion of material bodies or do, in addition to it, immaterial 'forces' exist which are located in the bodies and in the vacuum? Is the contraction of bodies, stated by the theory of relativity, a real or only an apparent contraction? Are the 'matter waves' introduced by De Broglie 'real waves,' or only 'apparent waves,' etc., etc.?

Toward Mutual Understanding

By learning about the logical structure of science, as described by the logico-empirical analysis, we learn a great deal about the analysis of statements in every field of knowledge. We learn, above all, the distinction between statements which can be confirmed or refuted by experiments and statements which can be confirmed by purely logical reasoning. The first type has always to contain the operational definition of the symbols. The second type can be checked without knowing the meaning of the symbols, if we know only the mathematical rules. To the last group belongs, *e.g.*, as we learned, the statement: If $E = IR$ is true, then $I = E/R$ is true.

We learn, moreover, that if a system does not contain operational definitions, the logical conclusions that can be drawn contain only symbols. But no conclusion follows which can be checked by observation. The question whether such a statement is 'true' in our physical world, or more generally in the world of our experience, is an empty question, or as one sometimes says, a pseudo-question.

This insight is a large step toward the understanding of the meaning of statements in any domain outside science proper and a great step toward judging truth of any kind. In fields like ethics, politics or religion, we have also to distinguish clearly between the factual content of a certain doctrine and the symbolic language in which this statement is couched. The example of physical science is a guide in a more difficult world and will help us to disentangle statements of religious or political principles with respect to whether they are really statements about observable phenomena or only a bid to use a certain type of symbol.

In physics this analysis is comparatively simple and not so loaded with emotional and egotistic elements. If someone asks people in the strongest language to 'follow the voice of their conscience' or 'to follow the will of God' this bid will be empty if he is not able to state the operational meaning of the voice of our conscience or how actually to find out the will of God. The student of science who has been trained in logico-empirical analysis will immediately turn his attention not so much to the strength of the language, but to the question of who is authorized to interpret the will of God.

The training of students in logico-empirical analysis is also the first step towards an integration of human knowledge. For when this analysis has been applied, all human knowledge forms a homogeneous system. The concept of 'meaning,' of 'confirmation,' of 'truth,' becomes identical or at least similar in all fields. Our knowledge is reduced to statements about observable phenomena meaning not only sense observations but also emotions, as far as they can be described in a language which is understood by everybody with whom we want to communicate.

By logico-empirical analysis the student will learn that the statements of science are neither 'proved by reason' nor 'inferred by induction from sense observation.' The principles of science are a structure of symbols accompanied by operational definition. This structure is a product of the creative ability of the hu-

man mind and consists of symbols which are a product of our imagination. But this structure can be checked for its truth by observations which can be described in every-day language. By logico-empirical analysis the creativity of the human mind emerges as the primary factor in science. Thus the student will learn that the role of this creativity in science is by no means inferior to its role in the humanities and even in art or religion. And we now can understand that the emphasis on science teaching will no longer interfere with interest in the humanities but will rather support it.

However, the role ascribed to the human mind by logico-empirical analysis does not exhaust the contribution of science teaching to the understanding of the human aspect in our picture of the world. For by logico-empirical analysis the role of the human mind is only hinted at in a rather abstract way. But our imagination and inventiveness are much too limited to enumerate and discuss all possible principles which the creative ability of the scientists may set up in order to derive the widely ranged phenomena of our experience. For this we have to study the principles which have been actually set up in history. We have to complement our logico-empirical analysis where 'empirical' means individual experiences, by 'historical analysis,' which is empirical not for the individual, but for the human race. The history of science is the workshop of the philosophy of science. We have to teach the student all the relevant principles which have been set up in the course of history. And we mean by 'history' the extension in time as well as in space, the development of structures of science through the ages and over the surface of our globe.

In this way the logico-empirical analysis gains life and color and becomes a living link between science and the evolution of the human race. The average textbook of physics tells us very little about the evolution of the principles of this science, except some dates of anniversaries. Very often these books speak about ancient and medieval science in a derogatory way; they claim not to understand why for ages people were not able to discover such a simple law as the law of inertia which today every schoolboy knows is an obvious result of our every-day experience or is even self-evident. But despite these smug remarks the same textbooks are not able to formulate this law of inertia in a satisfactory way. They even block the understanding of this and similar principles. For it is clear that a principle which intelligent men have not found through centuries cannot be as obvious as the statement presented by these books as the law of inertia. This complacent attitude imperils even the understanding of the evolution of thought and helps to spread the spirit of intolerance and bigotry among the students, while an attitude of adequate 'logico-historical' analysis would contribute towards good will between people of different background and different creeds.

In order to understand the steps in the evolution of human thought the best way is to present to the student in an elaborate way the chief turning points in the evolution of science with the emphasis not so much on the discovery of new facts but on the evolution of new principles of changes in the symbolic structure. It would be, for example, of the greatest importance to discuss thoroughly the conflict between Copernicus and the Roman Church (or, for that matter, with the Lutheran Church). I think that every student of science and the humanities should have a clear understanding of this issue, which was one of the greatest and

most interesting in history. If this subject were discussed thoroughly and in a competent way, the student could get a good understanding of the eternal conflict between established patterns of presenting the facts and attempts radically to alter the symbolic structure of science. The student would learn that the tendency to preserve the old pattern of presentation is often disguised under the name of 'common sense.' He would learn from this example how the appeal to 'common sense' has been used in the history of mankind to disguise the interest of established governments and churches. For, as he would learn in particular, the role which the interaction between science, philosophy and religion has played in the justification of political aims is very great.

Equally, students of science and philosophy should learn exactly what was the issue between Descartes and Newton and again between Newton and Liebnitz. From these disputes has arisen what we now call the 'classical physics' of the nineteenth century, which until today has been the basis of the training in science which our students get in engineering or liberal arts colleges. To grasp these issues would help them to understand our present science as a dynamic living being. This would not happen if they were confronted only with the desiccated and artificially stuffed skin of science which is presented in most of the current textbooks.

If the students get an understanding of the earlier turning points in science, it would be much easier for them to grasp exactly the meaning of the turning point around 1900, when our twentieth-century science was born.

This last turn has been dramatized by the slogans 'crisis of classical physics' or 'decline of mechanistic physics' or 'refutation of materialism,' etc. If one has been trained to analyze the nature of a 'turning point in the history of science,' one will be less inclined to believe that the 'crisis of classical physics' is a 'crisis of rational thinking' or even a justification of an irrational approach to science.

As we already mentioned, it is not sufficient to approach these turning points of human thought by logico-empirical analysis only, for the human mind is not strong enough to carry out an exact analysis of such a complex structure. One has to study classical physics as an extinct organism which had grown up against immense obstacles, which eventually defeated its opponents until it turned out no longer to be fit for survival. With this training one would have a clear understanding, say, of the broad analogy between the fight of medieval philosophy against Copernicus with the fight of modern newtonian philosophy against Einstein.

Students who have this kind of logical and historical training will easily 'debunk' the attempts to exploit the 'breakdown of newtonian physics' and the 'defeat of materialism' in order to justify a return to ancient 'organismic science.' They will be, moreover, on their guard against the attempts to exploit this 'crisis of thought' in a fight against liberalism and democracy, or, for that matter, against all progressive trends which have been historically labelled 'materialistic' or 'atomistic' or 'mechanistic.'

What Is Behind Rival Ideologies

By this approach the student of science would be led in a natural way to an understanding of the struggle among rival ideologies. It will be a great attraction for him to approach these problems starting from the role which has been played by his own special field. *The student of science will get the habit of looking at social*

and religious problems from the interior of his own field and entering the domain of the humanities by a wide open door and not by the rear door of some isolated humanity course which he may take for 'distribution.' He will need neither a 'spoonfeeding' of trivial information nor a stuffing with technical material which is no real profit for his general education.

When the student has an understanding of the historical struggle of scientific thought, he will become aware of the fact that there will be always such a struggle when science pushes its frontier ahead. For then the traditional symbols used in the formulation of scientific principles will no longer be fit to cover the increasing range of newly discovered facts.

The symbols used to formulate the principles of science (terms like matter, force, energy, entropy, etc.) are taken from the language of everyday life and always keep some of their original connotation. Very frequently, they are traditionally connected with meanings that, in turn, have a certain status in a political or religious ideology. Terms like 'matter and form,' 'order of nature,' etc., are used in Thomistic philosophy and are by this fact connected with the political and spiritual goals of the Roman Catholic Church. Words like 'materialistic interpretation of the phenomena of nature and society' are used in the philosophy of Dialectical Materialism and are connected with the goals of Marxism in politics and economics. There can be no doubt that such creeds have played a decisive role in the actual appreciation of scientific theories in human history.

There is no better way to understand the philosophical basis of political and religious creeds than by their connection with science. The student who understands the relation of his science to these creeds has an access from an inside track. He will easily and confidently cross the bridge between science and the humanities.

The attentive student of science will notice soon that the traditional symbols of science have a life of their own. They persist in a changing world where the scope of science is continually growing. This point becomes particularly clear by focussing the attention of the students at the turning points in the evolution of scientific thought.

The student will learn, for example, in what sense materialism has been encouraged by the physics of the nineteenth century and how this in turn was anticipated to a certain degree by the Epicurean School in old Greece. He will learn how the transition from medieval physics (which was based, in its turn, on the aristotelian school of Greece) to the Galileo-Newtonian physics, found its continuation in the school of Laplace at the end of the eighteenth century at the time of the great French Revolution. He will appreciate, then, how the fight of newtonian (mechanistic) physics *vs.* aristotelian (organismic) physics became connected with the fight of liberalism and tolerance against feudalism and bigotry.

He would thus understand that what scientific and corresponding political (ideological) issues have in common is the use of the same symbols with their wide range of connotations. In this way the student of science would learn to appreciate the great value of symbols in the history of human thought and for that matter in the history of human behavior.

Whoever has understood these historic issues correctly will attain a sound judgment regarding the last great transition, around 1900, when mechanistic physics had to give way to a more general approach. The transition from the nineteenth-century to the twentieth-century

physics culminated in the Relativity and Quantum theories which, in turn, have led to new philosophical slogans describing this transition as 'overthrow of the conception of absolute time and space' and 'overthrow of physical determinism.' The student who has been through the training in logico-empirical and historical analysis will assess the attempts which have been made to exploit the new physical theories for the benefit of particular religious and political ideologies. He will look through the argument by which the 'overthrow of eighteenth and nineteenth-century deterministic physics' has been used in the fight against liberalism and tolerance, since these creeds had grown up in a period of mechanistic and deterministic science. He will understand that the breakdown of mechanistic physics did not actually imply a return to organismic physics, which was, historically, connected with the political and religious doctrines of the middle ages. He will understand why twentieth-century Fascism has gladly interpreted the 'crisis of physics' as a return to organismic physics which could provide a 'scientific support' for return to some political ideas of feudalism.

But, above all, the well-trained student will understand the paramount fact that, actually, mechanistic physics was not replaced by any organismic physics, but by an entirely new approach to science by logico-empirical analysis which has been in the twentieth-century the starting point of all the new physical theories.

If science is taught in this way, the emphasis on science and technology will no longer be an obstacle to a liberal education of the student. The deplorable gap between science and the humanities will not arise, let alone widen. On the other hand, the intensive study of science as a living being will give to its student a profound understanding of the role of the human mind in human action, which is the very goal of instruction in the humanities.

By emphasizing the historical evolution of scientific thought the student will learn, moreover, that the human mind has not always been satisfied with the logico-empirical analysis of science, since this presentation of science is only satisfactory for the 'purely scientific' purpose of predicting and mastering the observable phenomena of nature. But the phenomena are derived from principles which are couched in symbols and, as we hinted already, these symbols have their own life, which is to a certain degree independent of the evolution of science proper. These symbols which are created by the scientists may even become occasionally a 'Frankenstein.' However, as these symbols are not unambiguously determined by the scientifically observed facts, they are strongly influenced by extra-scientific factors. The choice of symbols is, as a matter of fact, very dependent on the impact of current social and religious movements. These influences are largely responsible for the decision whether one prefers rigid pieces of matter as fundamental symbols (materialism) or whether one builds up all concepts from mental elements (idealism), whether one picks as the ultimate building stone a nondescript reality (realism), or whether one starts from elements which cooperate to a certain goal (organicism). Every satisfactory instruction in the philosophy of science has to discuss these choices of symbols on the basis of logical and historical analysis. The influence of political and religious trends on the choice of these symbols should by no means be minimized as is often done in the presentation of the philosophy of science. On the other hand, if 'metaphysi-

cal integrations of science' are discussed, particular attention should be given to those integrations which have played a role as bases of ideologies. For this reason, doctrines like Thomism or Dialectical Materialism should be carefully and correctly presented to the student and should have more time devoted to them than is devoted to some sophisticated systems which played but little role in human life and human actions.

If the foregoing plan is followed, we shall have no graduates of science who have no clear idea of the teaching of men like Aristotle, St. Thomas, and William of Occam or, for that matter, of Hegel, Marx, and Lenin. The type of science graduates who are without humanistic training will disappear just like those who have not even a clear picture of what the contribution of Copernicus was to our world.

The educational value of this type of instruction for science students seems to me beyond doubt. However, there is still the question of where to find a place for this in the curriculum. The most natural plan probably would be to teach the science courses of broader scope according to this method. This would hold, *e.g.*, for the elementary courses in college physics, chemistry and biology. Such a start, would certainly be very stimulating and helpful for the beginner. However, since they have not the background for subtle problems, these 'survey courses for beginners' should be complemented by 'survey courses for advanced students.' These would be appropriately given just before graduation. They should answer the questions which were prompted by the elementary courses and treat them on a higher level. These new courses should not be 'superficial survey' as this word is often understood, but a birdseye view of the results of science, with a special eye to unsolved problems. These courses could be given according to the suggestions of this paper.

If there are not a sufficient number of science teachers in a college who are interested and trained in this plan of instruction, one or two 'special' courses outside the usual science curriculum should be established to be given by the few available teachers who have the necessary training and inspiration for this task. One may give these courses under the title of 'philosophy of science' or 'foundations of science' or 'science and the humanities.'

The present trend toward 'general education' has, in some colleges, led to the establishment of science courses for non-science students. The program of these courses emphasizes the bridge between science and philosophy or science and the humanities in some ways along the lines I discussed in this paper. In these plans, however, only the non-science student will be presented with the educational value of science while the 'concentrator' in science will be the one who will neither be able to give any information about the role of science in human society to his future pupils nor to his community in general. The questions regarding science which are most interesting to the general public should be answered by a competent and responsible man; and this obviously can be only the science teacher in the high school or college.

CHATFIELD'S 'FIRST CHURCH':
A Legend Analyzed

MARGARET SNYDER *

Every society has created in its early stages a legendry that borders on the mythical—tales of things done in a free and ample fashion felt to be unacceptable in stories of one's contemporaries but delightful as interpretations of the past. The telling of such tales affords an invigorating sense of release from the hard-pressing limits of the actual, and their content often yields significant indications of the system of evaluations on which the society has been based.

Such a story is told in Chatfield, Minnesota, as the 'history' of founding the town's first church. I. F. O'Ferrall, the story goes, was one day shaken out of his concentration on business by a tremendous racket going on in the Land Office next door. He went over to see what was up and found the two chief officials dancing about in hilarious glee and chanting, 'We're going to start a church! We're going to start a church! Whoo-oop-ee-ee!' Mr. O'Ferrall joined the hilarity, and when breath was exhausted the three men sat down to consider what *kind* of a church they should start.

This was more difficult, for while they agreed heartily that a church would be 'good for' Chatfield there were such wide discrepancies in their personal church relations that common ground was hard to find. One of the men, the story sets forth, was a Unitarian, one was an Atheist, and Mr. O'Ferrall had been bred in the Catholic faith, though he was no longer an active communicant. None of the three seemed a practicable basis for their purpose, but finally Mr. O'Ferrall suggested an Episcopal church: his newly acquired bride was an Episcopalian and she would like having her own kind of church in town. The others gallantly accepted the suggestion and proceeded to act upon it. Within an unspecified brief while they organized a parish, fitted out a chapel in a room that Mr. O'Ferrall added to his office building, engaged a clergyman, and invited Bishop Whipple to visit Chatfield and dispense his blessing upon the pious *fait accompli* that gave Chatfield its first church. . . . Eighty years later the rector of St. Matthew's enjoyed nothing more than telling that story of how his parish was founded and pointing out the window above the altar inscribed to I. F. O'Ferrall, the patron thereof.

The legendary character of the tale emerges clearly enough when set beside available documentation. To take the most obvious point: O'Ferrall did not reach Chatfield until 1856, the year after the

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Methodist church was organized there, and it was two years later that he brought his southern bride to the town. For the moment, however, it is worth examining the legend as a reflection of certain elements in the scheme of values prevailing in American life, elements making for the belief that a church is 'good for' a town.

II

The belief was a logical enough emergent from the long and repeated struggle to transform the American continent from wilderness to the seat of an orderly society. That struggle was expected to reproduce in the new setting a society as much as possible like the one from which the western migrants had come. Such changes as they might individually or collectively desire were not concerned with the basic structure of society but with the incidence of that structure upon the individuals within it. Each person sought for himself a position more favorable, in one respect or another, than that which he had occupied in the older community from which he had come, but he did not question the structure itself. Ordinarily those western settlers had only a rather limited and piecemeal awareness of what the structure actually was.

In particular they were unaware of how generally their society was based upon a use of *words* as if they had a kind of fixed and ultimate value-in-themselves. That estimate of words was an unrecognized heritage from primitive notions that to name a thing was to possess power over it, as witness the tabu in certain present-day tribes against speaking a person's 'true' and secret name. In such evaluations the *word* became identified with the *thing* it named. 'Truth,' being an approved arrangement of words, became, by the magic of verbal authority, not 'merely' words, but an entity in itself, absolute and unquestionable; it was always equal to itself; it was never equal to anything else; and it never contradicted itself.

A whole system of absolute values was based upon that habit of regarding words as things-that-exist rather than as symbols for the human processes of abstraction. Such values made for a world of black-and-white, of this-or-that dichotomies, wherein people who happened to differ in their definition of 'Truth' found themselves driven, by all the logic of their existence, to a death struggle in defence of their convictions concerning the 'right' meanings of their absolutes. The great and powerful embodiment of this two-valued absolutism, in that European society from which American society emerged, was the Church, and the long struggle against successive forms of churchly finality was essentially a struggle to escape from a static system of values that attempted to set hard-and-fast limits upon the dynamic movements of a world in the unending process of change —a process immensely accelerated with the development of scientific inquiry in the seventeenth century.

American history had its deepest origins in the will to participate in that change, whether on religious, political, or economic levels, as the briefest reflection on colonial motivations will establish. Yet so subtly pervasive was the dogma of absolutes that when early settlers, yielding themselves to the movement of their times, found themselves swept into more changes than they had bargained for, they hastily set up new absolutes in a kind of panic self-defence. The Puritan exemplification of that pattern is familiar to triteness, yet nonetheless pertinent to understanding.

The repetition of this pattern through successive stages of America's westward

adventure brought successive levels of discrepancy between the changing, infinite-valued realities of American life and the persistently static, two-valued linguistics by which the relationships of that life were expressed and manipulated. Always, at the beginning of a new settlement, there was a period when the sheer primitive necessities of the wilderness so absorbed the energies of those who had to deal with it that little discrepancy existed between the structure of the external circumstances and the structure of the human-linguistic reaction to those circumstances. When everyone had a part in the primitive processes of cutting down trees to build a shelter, or finding wild game and berries to supplement a meager food supply, circumstances and linguistics were in close correspondence. That closeness probably helps to explain the sense of warm social integration so commonly reported from frontier communities.

The man who raised wheat so that he and his neighbors might eat was near enough to the thing itself that identifying the word 'wheat' with the grain he had produced did no great harm to his sense of actualities. But western settlements rapidly grew to that stage of complexity in which a man asking 'What is wheat today?' might be answered by a figure representing the amount of 'money' which would be 'paid' for a bushel of grain if it were 'sold' in a certain 'market' some hundreds of miles away. The interposition of so many abstractions-of-abstractions between the *thing* and the *word* created a life-situation which destroyed the equilibrium between language and the facts it purported to represent. Such destruction encouraged the accumulation of many unused internal human energies, which inevitably forced their way into expression through various extremes of behavior, such as the Saturday-night drunks familiar to every frontier town.

III

The aggressive and widespread acquisitiveness of frontier society was another of those extremes, facilitated by the common confounding of symbols, linguistic and monetary, with the realities they represented. The distribution of the land, for instance, was carried out on the basis of legalized but primitive grabbing: whoever got there first had the best claim to any given piece of land. It did not matter whether the claimant was a settler whose work would add social value to the land and provide a livelihood for a family, or a railroad company operating purely for speculative profits.

Men boasted of their acquisitions. They had the *best* quarter-section, or yoke of oxen, or span of horses, in the country. The accredited basis of horse-trading, for instance, was just such boasting, one man's ability thereat pitted against another's. Judgment was often based on the mere symbols of acquisitions: witness the thousands of dollars invested in townsites whose only existence was in gaudy lithographs and eloquent descriptions published by the promoters.

In their unconsidered grabbing, men lost the power of discrimination and entertained sets of mutually opposed ideas. It was an altogether easy matter for a railroad speculator to believe most eloquently that he was a great public benefactor in the very moment when he was plotting to take from the commonwealth a million acres of its choicest land. And men believed him, for they were too well accustomed to accepting the word as equivalent to the event.

The isolation and limited range of available experience on the frontier accentuated the tendency to extremities of

behavior. Western editors reached unique heights of invective as they blasted their rivals, whether the issue of the moment was the election of a President or the location of a neighborhood road. To the hearty partisan no middle ground was possible, and most men were hearty partisans.

For great numbers of plain folk the chief opportunity for release of pent-up energies lay in the perfervid experience of 'revival meetings,' where the sharp separation of the 'saved' from the 'damned' afforded surging satisfactions to those who felt themselves among the 'saved,' while the fear of hell-fire provided a measure of catharsis for the 'damned.' When the climactic experience of the 'revival' was past, there remained long-sanctified verbal formulas for bringing men's unordered impulses under control.

The importance of such control was felt even when it was not clearly articulated, for the unpredictable and violent consequences of human impulses were even more alarming than the violences of nature. Men could not change the climate, true, but they could provide shelter against its extremities. Against the extremities of human passion—their own or their neighbors'—they knew no shelter but such as was afforded by the creeds and practices of established institutions.

Of these the most widely and favorably known were the churches. It was altogether natural that the more serious settlers should make haste to organize those centers for the strengthening of the social bonds. That membership in the churches did not uniformly result in well-ordered living was put down to the lamentable weakness of 'human nature,' not to any fault in the structure of controls provided by the churches. The word of 'the church' was 'the Truth,' and men did not inquire too nicely into the matter of how it happened that different 'churches' spoke different 'truths,' or how such differeneces were to be reconciled with each other.

IV

Churchly authority was, of course, not the only means of support for the approved social patterns. Additional sanctions were given by the stories which the people early began to shape from the growing body of their shared memories. Such stories often took their rise in some historically 'real' event, but as they were shaped in many retellings, they came to express both the admirations and the antipathies of the people. Those American legends might well be found as rich in sociological implications as any of the Trobriand legends so brilliantly examined by Malinowski.

What, then, are some of the implications of the Chatfield legend of its 'first' church?

The most obvious point is the way in which the story links two different, and in some sense antagonistic sources of social authority: the 'Land Office gentry' and the 'church.' The 'gentry' is represented in two closely allied elements: government or political power (in the persons of the Land Office officials), and money or economic power (in the person of O'Ferrall, the money lender, later to be dignified as 'banker'). This linking of 'worldly' with 'spiritual' sanctions raises interesting questions of which came first in the evaluations of the time and place.

Then there is the establishment of a church by sheer fiat. It is a peculiarly American gesture, of the same stuff as the arbitrary — and successful — joining of Lake Ontario with the Hudson, or the Atlantic with the Pacific. That the church so established should be Episcopalian is particularly interesting, for of all protes-

tant denominations the Episcopalian was perhaps the least accessible to such high-handed bulldozing. Chatfield's legend-makers could almost be suspected of thumbing a collective nose at the imputed snobbishness of an authoritarian church polity.

Finally, we may note the purely personal, almost accidental nature of the choice of that denomination. One of the men romantically wished to please his bride, the others gallantly supported the wish. Is the legend saying here that church membership is as wholly individual a matter as romantic love itself? Clearly it reinforces the American rejection of a state church and its compulsion.

All this may seem a heavy weight of generalizations to hang on the peg of one trivial story which has somehow survived in one small town. But the small towns of America are full of such stories, and they have been almost entirely neglected as a source of light on American origins. The more spectacular of the regional tales have been collected and given some study, but what of the sociological indications in the vast store of localized and small-scale legends? They deal with activities within the range of ordinary people's everyday experience, and they are regarded by their tellers as genuine 'truth.' But in their deviations from objectively determinable 'fact' they reveal much about what Americans even today feel is 'good for' their towns.

TALKERS

They champion words to spear
The armor of the brain,
Depend upon the ear
To make a meaning plain.

But words are hoops. They wheel
Before the eye, the heart,
Along the nerves, reveal
New meanings for each part.

A gesture is direct
As hands outstretched with bread.
The wary intellect
Will watch for the unsaid.

RUTH STEPHAN, in *Poetry: A Magazine of Verse*

SYMBOLS OF DISTURBANCE

ADRIAN YOUNG *

DARKNESS was behind me as I sat with my back to the four-foot wall of the first Observation Ward; darkness above the curtains of the windows that faced me eight feet away; darkness of the cloth in which were cut the nine yellow squares to the right that stood for the door; darkness thickening the air of the corridor as it ran past me to the left and vanished from sight; darkness I knew buried the ten beds of the second ward leftward also. And in the dark was a bright cave, dropped from a shaded lamp above the nurse's table beside me, and islanded within its rim, wall, table, chairs, floor, the nurse and myself. Darkness, not quietness. Into our bright cave came symbols of disturbance—sliding and clang shut of a drawer, sheets hoarsely rustling, floor-slapping of slippers, muttered words. As we sat by the table—reading maybe—half-awarely we gave the symbols meanings. That's who? He's turning over. No, he's up. He's doing what? Ear-symbols. Eye-symbols too, as I left the cave to swim the gloom-laden reaches. As I watched the dark film it gathered variation and form. And the symbols were men's doing—symbols of disturbance.

After we had stopped him beating his head on the radiator, we gave Mr. Prin a sedative and put him to bed again. 'No,' said the nurse, 'he didn't hurt himself—he's used to it now.'

Mr. Amble came from the second ward and, glancing not aside as he passed us, turned the corner to the washroom to void his bladder. In half an hour or so he returned.

Mr. Velpetos, whose bed was in the corridor where we could see him, was prevented from fingering his head by a restraining sheet. But by twisting and wagging his head he had at last loosened the bandage, and the ten stitches on each side of his brow were now to be seen. The suture must have been itchy or sore, and we had a little trouble persuading the bandage back.

Mr. Amble was now passing on his way to the washroom. 'Is that all it is?' he said, when I told him the time. He was on his fifth cup of hot water from the tap when the nurse came. 'Mr. Prin's out of bed,' she said. And coming in view round the corner was Matthew, stark naked, making purposefully for the door on his hands and his knees. The door was near the Continuous Bathroom. I spoke to Tom who was on duty there, and Matthew soon was lying in a tub, only his head above the canvas cover.

When I emerged from the Continuous Bathroom, Mr. Velpetos, sloping back from his feet, was being slowly shunted out of the washroom by the nurse who was leaning and pushing on the small of

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his back. I joined her and we returned him to his bed. He had flitted unmissed while Mr. Prin was absorbing us. He shouldn't have been up, for only the day before he'd had a leucotomy.

Mr. Amble had entered the washroom with a toothbrush. Quick delicate oscillations of the wrist and heavy slow movements of the arm, out and in, down and up, were interspaced with scrutinies in the mirror, prolonged and minute. In less than half an hour he had satisfied himself that his teeth were spotless. One sedative had been given and there was no order for another; and as he said himself, 'I may as well be doing something instead of lying in bed, when I'm not sleeping.'

I was hardly sitting in my chair by the nurse's table but I sprang up at a tremendous clatter from the ward. I stared into the darkness, relieved as it slowly settled into the form of a blind that slapped at the open top of a window. I stepped up on a radiator and closed the window.

Mr. Velpetos we discovered had wet his bed, so I fetched sheets and the nurse and I changed him. She then went for her coffee.

Mr. Amble tramped by with a comb in his hand. Though he was on special observation, I couldn't now leave the ward with him. But he was pretty safe.

Mr. Gromble was up, asking me whether or not he was going to get his aspirin. He couldn't sleep for a headache. When he was home he took aspirins every night. 'But that nurse—I've got a five year old grand-daughter's got more brains than she has. They must have given her a black band so they wouldn't be bothered with her any more in the nursing school.' He stumped into the gloom with a stiff-ankled uneven rhythm, black on the bright yellow squares of the door. I leaped up as he rattled and rattled its handle. I reasoned with him. 'I can't give you medicine; neither can the nurse without a doctor's order.' After a while he said, 'Would you get the nurse to see me if I go to bed?' I assured him I would.

Mr. Amble reached the ward before us. I heard him pulling the clothes off as he made the bed.

The nurse was back. She was taking Mr. Gromble's treatment sheet to the doctor on duty, when the body of the silence was pulverized into a prolonged rowdy buzzing. I had never heard the buzzer before. Neither had the nurse. Where should I go? Was it fire? Was it someone getting hurt? And where? How —above all—could I stop it, before the two wards were out of bed? On my way up to the Night Supervisor on the next floor, I met her coming down. I followed her as she entered the Continuous Bathroom. Tom had never entered my head as I had run past its door. He had been having trouble. Mr. Rouko had been trying to force his cover. Luckily, Tom had managed by himself; but he hadn't pushed the buzzer again to stop it. Never again in my service have I heard the buzzer.

I had sunk loose in my chair when again Mr. Amble passed. His gait and mien were as full of his intent as if the hurly-burly that had lately thronged the air hadn't reached him. He began running the washroom taps full. This was noisy; I closed the door and watched him wash his feet.

II

This is what we call a disturbed night. From the window I could see a length of earthen lane that glowed under a lamp; among the solid cubes and the delicate clusters of lines above, little prickles of radiance that stared at me; and beyond was the unlighted sky; these were tran-

quil. So was the concrete that boxed me in and held me two stories high in the night air. The only points of disturbance lay within the patients—or me. To startle out of a chair at the slapping of a blind isn't an apt response to the situation. What's very serious in a flapping blind? But for me it wasn't a blind: it was a sound that could stand for a number of serious possibilities—a patient injuring himself or someone else, or falling out of bed; and whatever else it might be, a noise that could waken patients who are much harder to put to sleep than to waken. And the purpose of the buzzer was to send me through a door to where help was needed; but the door it sent me through was the wrong one. In both cases I had misinterpreted, misevaluated, what I had heard. Till my false personal meanings for the slapping and the buzzer had been corrected, nothing I did was an effective response to the situations they stood for.

To an onlooker who knew all the facts my actions must have seemed stupid and without meaning. 'I,' such a person would say, 'would certainly have recognized the flapping of a blind; I'd have remembered there was another person on the ward, and I'd have gone to Tom before considering other possibilities.' And when a patient's behavior seems to me to be stupid and meaningless, I remind myself then that I cannot know the situation as his whole make-up at that point of space-time creates it. This whole make-up chooses or ignores part of the situation, pieces them together, and gives them a meaning, never the same as mine, and in the case of a very sick person, much different. Sometimes I can guess at this meaning; other times it is quite beyond conjecture.

Mr. Starey had wakened at seven, pleasant and affable. In half an hour he had run Mr. Teethle, worried and ungainly, from the sunroom, and had borne down on me. When I now eat, my swollen lip is painful, and there are four other spots that are tender to pressure, because Mr. Starey acted as if I were unfriendly, and his evaluation was wrong.

Misevaluations in some come and go without a trace, like shadows of passing clouds. It is as if there were a flux of inner states that normally accompany fear, joy, and other such feelings. And when the state and the feeling come, the patient seeks in the nearest situation he can find a meaning that'll give him a reason for feeling as he does. Mr. Weffels' mouth and lips were swollen, edematous. Combined with lack of teeth, it made speech a fuzzy amorphous babble. But once I made out a sentence. Sitting up in bed, he was drinking a cupful of water. His face was troubled that lately had been smiling, thoughtless, and appealing as a child's. 'These people,' he said, and he waved vaguely at the wardful of patients, 'these are my wife's relations.' He cocked his head away, raised at the same time shoulders and brows, and as they fell he sighed.

I can often reason with Joe Struffin, and persuade him out of a misevaluation. But it's like throwing out a stick on a rising tide—it'll soon be back in a slightly different place, for the inner distorting need is unaffected. He came from the darkness of the ward a little after lights out. Commonly boisterous in voice and manner, he spoke to me quietly, perturbed: 'I want to show you something, Mr. Young.' We entered the dusky ward, encompassed on three sides by shapeless beds. 'See there. You can read the letters R—A—D, and over there you can see the three images.' What I saw on the wall was two oblong panels of light, patterned by fine-spun shadows, each divided in three

by two bolder lines. The letters or images weren't there for me, and the light shapes themselves I intended showing Joe were thrown through windows. I pulled all the blinds down on the nearest side—the south. The shapes on the wall remained.

'You see,' said Joe.

'The lights are coming through some window, Joe,' I told him.

'I hope so,' he said, doubtfully.

I stood back to the wall under the symbols. Through one of the northern windows I could see a lamp gleam that was brighter than the others. I walked over to the window; down I pulled its blind and the one beside it: the panel had vanished.

'I guess that's right,' said Joe, 'thanks a lot for clearing me up on that.'

But the days after it was light that flashed in the west, or God coming down in a mist in the north, or the torturing he saw as he looked through the basement window, or his being crucified ('for if I'm not, why is the hospital built in the shape of a cross?') or the changing of his mother and father to Japanese by machines we have. Except for the 'smell of the Holy Ghost' which couldn't be detected by other nostrils than his, there was always something outside him for his delusions to refer to. There were in the west what I assumed were trolley flashes; the head of a building to the north softened and was lost in low moveless vapors; cruciform the building was, as I supposed, for lighting; people could be seen moving round in the basement, and there are certainly machines. But it's the use he makes of these things, the meaning given to them, that marks him as a sick man. He crowned a period of signs and portents by pressing his forehead and saying, 'Something's happening. I feel it up here,' which was likely the closest he had come to the source of his experiences.

III

Patients placed in the tubs are commonly noisy and restless. To make for sleep, we turn the lights out except for a goose-neck that faces the wall. From where I sit by the light I can hardly see if the eyes of the two farther patients are closed or open. I can see when the door is opened only when the person who opens is inside. I can hardly even hear the door, for the fan is chugging and the water is bubbling and sniffling and sizzling and sputtering in spasms.

One night before I was aware of it Matthew was standing at Mr. Rouko's tub. He was holding a folded magazine. 'Please,' he said when I reached him, 'I must read this to Peter, I must,' and there was desperate entreaty on his face. Excited by company, Peter had begun to speak louder. He still spoke in Ukrainian, but by his glance and his flow I knew he spoke on his own subject-matter, not in response to Matthew. He wouldn't have even heard Matthew reading, and whether he heard or not I doubt if Matthew would have known.

The nurse Matthew had eluded followed him; but he was clinging to the water pipes with his left hand, and his mood was so uncertain that she fetched the other attendant, who was out eating. He took off his glasses and we soon had him in bed with little difficulty. The nurse gave him a hypo and I sat on the bed holding Matthew's wrists, listening to him, striving to soothe him, till the sedative settled him. 'When I was sick before,' he said, 'I was studying to be a priest and I got very nervous. And do you know what I did to cure myself? I went to the farm and stayed there four months, and that made a man of me. I've got to go there again right now.'

'But you can't go in the middle of the night.'

'They'll take me any time.'

'But at this time of year there won't be anything to do, Matthew, only a few cows to milk or trees to cut, and men enough to do it.'

'I know that, but Peter'll know what I ought to do about the farm. I've said please. You've got to let me go. Peter'll tell me. When I came back again I was as strong as an ox and my mother was proud of me.'

'You've disturbed Peter already, and he wouldn't hear what you have to say.'

'I won't disturb him. I'll just see him for a minute. And you know that paper I had? I've got to read him something from that.'

'There'll be plenty of time tomorrow. If you don't go to sleep, you'll disturb the other patients. You mustn't think only of yourself, Matthew.'

'I know I mustn't think of myself. I want to think of my mother. If I go to the farm then I'll get strong and make my mother happy.'

From there he began to tell me his saints had told him that he must see Peter. But I thought it was time to leave him.

I was curious to see what he had been wanting to read. The two pages of print were unbroken—too lengthy for Matthew—except for a box in the center of one page, and it held this:

> When Edward Everett Hale was chaplain of the Senate, someone asked him 'Do you pray for the Senators, Dr. Hale?' 'No: I look at the Senators and pray for the country,' he replied.

This I was fairly certain was Matthew's passage. At night I have seen him an hour or more at a time, kneeling with back to a toilet bowl, left fingers in his right palm, looking at nothing. And once when I felt I should rouse him from his washroom orisons, he said with a distant look of content, 'I like to pray. It's a mighty happy life.' And the word *pray* in any sense, and the postures of prayer, answer some inner necessity. And *farm* too perhaps is a symbol of escape from the intolerable. The words are as charms or fetishes, having for him a meaning of reassurance, wherever he finds them.

IV

Matthew's words indeed seem to do for him what folded pieces of paper, tufts of hair, and broom-straws do for Louis Flicka. One day I had been cutting a patient's hair in the washroom. Louis, as he was passing, furtively picked up a wisp of hair. A patient came over to me: 'Do you know what Louis did with the bit of hair? He dipped it in the toilet bowl and put it on his penis.' I remembered the magic of the middle ages wrought by wisps of hair and wax puppets. Once Louis had hung on his left arm by a piece of string a single broom-straw. An amulet? I remembered that Louis had said to me one day: 'Mrs. Kos where I stay, they have magic. Some magic good, some bad. In old country are men who look on baby and baby sick. B'lieve me, b'lieve me not. You ask doctor. He know.' He is always to be seen with quantities of neatly folded paper on his person (most of them soaked in water), cloaked by his dressing gown, thrust within his pajama belt, or carried in his hand. One day I opened one of his parcels. Nine paper towels wrapped a smaller parcel, from which I took five wrappers of toilet paper to find in the center two long and one short pieces of swab stick. He once put his accumulation of parcels in his pillow case, wrapped it about with sheets, blanket and counterpane, and lying on the stripped bed, laid his back on the bundle, gazing vigilantly round with folded arms.

And what these things mean for him, I can guess—but with what certainty? I

know that in the old country his father nearly killed him. In this country he was lumberjack, laborer, trapper, and at last farmer. He lost his money and his farm, and went into a mental hospital, depressed. Lately he has worked in a packing plant. He didn't like the work but he was conscientious. His landlady said he was very clean, very quiet. Every Saturday night he went to a steam bath. He read a great deal, he had the Bible both in English and his own tongue. He had no relatives in the country, nor—so far as the landlady knew—any intimates. He said he had never found a girl who had wanted him as much as she wanted his money. A letter came that his mother had probably been done to death by the Nazis. He wept and was disturbed. A week later he was arrested and brought here, for directing traffic and attempting to sweep the main crossing with a small broom. 'If I cheat someone, knock someone, ask? I no look for trouble. I look for peace. They shave me for my savings. My mother and my sister they rob me. I had land in old country. They rob me of it. I work, I save money, and every time someone cheat it from me. . .' What is the meaning of his collecting and folding paper? Provident labor, saving, protective rites, reassurance, or escape? I don't know.

But if the folded paper should stand for money and the money for security, there is a symbolism in two stages; and if Matthew's word *farm* stands for a place he was once at, and if his going there was an escape from what he found unbearable, again there are the two stages. There is first a symbol (thing or word), and then an event outside the user to which (for the user of the symbol) it refers, and then there is a value with which the event outside is charged (for the user of the symbol). The values may be a purely cortical appraisal, but the irrational ingredients more often are stronger. I know people who evaluate brussels sprouts not from an exact knowledge of their dietary worth, but because they 'like' them, or because they are 'afraid' of the insects that once before they found when they cut them open.

But it's not to be supposed that a sentence always refers to a sensory experience, or stands, in other words, for something outside the person speaking. Words can be spoken from habit; they can be a way of releasing power like pounding a punching-bag; they can clothe events that exist only in the nervous system of the speaker; they can be used with no regard at all for any event anywhere. We can speak of these words as non-symbolic, but they are at the same time the commonest symbols of disturbance — within their users.

When Mr. Rouko's in his tub, his orations last the night and convey little. He often says *Tovarish,* just as often as in English he says *Brother.* Considered pure, his oratory is magnificent, with long rolling deep-throated periods, rises and cadences, variation of stress, and a strong rhythm. And in his more denunciatory moments he will spit for vivid interverbal expression, and I know none, on the screen or off it, who could mean more in a spit than Peter. But he was talking to three people, none of whom knew his language, one or two of whom were asleep and the others unheeding. He spoke to no facts of sensory experience, but he conveyed an evaluation of his fellow-men: he expressed a mood of indomitable contempt or defiance for persecutors.

This is confirmed by what he has said in English. He would ask for water, wouldn't have it from a cup, and would insist on my sipping from the glass before he drank. Once when he had finished

a glassful, he said, 'You deed not dreenk dat time; but dat is all right.'

He addressed me, 'Come here, my brawder. You are my brawder, are you not? Say yes. Dat is right, for when you say yes you mean no, and when you say no you mean yes. You undairstand?

'I tell you secret. When dey ask who I am and where I come from—and dey will ask you—joost tell dem, "He good man." And you weel seet on de right hand, and I weel seet on de left and right. Some men weel seet on de left—dey de majority, and some on de right. Because God weesh dat dey seet dere.

'Why you feex that peelow? I know. You do not need to tell me. You weel hang me in de morning, and you weel need dat peelow when you carry me out. I know. But I don't mind.'

Here the Night Supervisor visited. She told me that the day before he had insisted on having five glasses of water. On being asked why, he said because five Jews were going to kill him.

When she had gone, Peter asked me, 'Who ees dat gairl?' I told him. He shook his head. 'No, she ees not. Why do you not tell me? She ees your seestaire. I know.' I asked him how he knew. It was obvious. 'You both have black hair. She ees your seestaire, and she weel cawm back in de morning and she weel kees you. I know.'

The nurse's hair and mine are both brown, but my conclusions from this were other than Peter's. The world of his feelings, bodied forth in his words, distorts his impression of the world around him, and nothing he predicts of that world happens as he says.

V

But some speech is less the consistent expression of a distorted world than the fragmentary expression of an inner world without order or connectedness. Mr. Digney's years are seventy, and he is in the hospital following a cerebral hemorrhage. His utterances have to be taken in relation to his presence. He is erect. He has the good-humored poise that comes from a school-teacher's awareness of knowing more. His cheek and chin bones and his nose are large, distinguished, his mouth straight and firm, his eyes blue and open in their gaze, his brows bushy, and his chin often judicially canted up-and-away. His enunciation is perfect, and his hesitancies in delivery imply considerable deliberation both in choosing his matter and clothing it in the right words.

'Did you get the article I sent you yesterday?' he said to me one day. 'I sent you one yesterday and one the day before. They struck me as being very ably written. How did they strike you? Well, that being the case, most people thought that all that was needed to be done was to appeal to the Home Secretary to put them out to grass again. But there was nothing gained by it. So there we were stranded on the island I told you about, and we were confined to an income of 14% from the island. I don't know whether my brother would receive that income or not, or whether it would go to the government—it usually goes to the government in such a case. This thinking business—it isn't going to last very long and as soon as we can get things started, we want to get the thing started, the thinking and the other things. There's a skin game somewhere—a tiger skin, I think—have you seen it? Now if I might just say this or—and words of a different kind—perhaps we might add to one another's success—if you would give me your attention for a few minutes. Who is the fellow who was on the roof? We've got to lead back to him sooner or later. That's what's coming—well, now—and—oh, now there's a

point which seems to me to be a desirable point — I didn't send neighbor heaven, so I can't say definitely. I wanted to, and two is four, and two is six, and two is eight—that's what I wanted to—I don't think I am *consecting* very well . . . there are *jardonic* patches. My *mummer's* combers and my wife's sister, and my *leases* and their husbands—well this much, that was that they were getting last year, and it wasn't very good stuff, and when it comes to getting into the Queen's house. Now this is a fact—I can state this as a very general authoritative fact. I was running for superintendent of the local house. I want something—*groten*—a prayer—something to lean on—anyway, it's all beautiful, it's all beautiful. It's been a beautiful big atlas. I don't know whether I name the right word or not, but it's been very beautiful. . . .'

His manner is decisive, authoritative. His mood wavers from placid consideration to an agitated restlessness—not that, when the words are in saying, one gets the impression that any of his moods go deep or are much more than simulacra. The grammatical structure of his talk is undisturbed; and this heightens the paleness of its reference to anything outside his nervous system. He had sent me no articles, nor had he ever spoken before of an island. Forms of speech impressed by years of custom continue bubbling to the surface devoid of content, with a pathetic awareness of inadequacy coloring an occasional phrase. He is the sport of like sounds, the surface of speech, he is carried from *to* to *two,* from *think* to *thing,* from *skin game* to *tiger skin,* from *consecutive* comes the nonce-word *consecting.* Words often come that are not apt, for there is little integrated cortical activity or purpose for utterances to clothe.

His words are activity in the field of symbols as aimless as his piling of bedclothes, tearing a counterpane or newspaper, pulling his toes, pushing at his bed-table or tearing the linoleum from its top, or sometimes bending to grab another patient's ankle, giving it a good push or pull, and murmuring to himself, 'No, it won't go.' From weakness of central control, all are doings of little value to the organism-as-a-whole. It is as if a symbol-producing center had been vivisected loose from the rest of him, working for all its worth, to no purpose.

VI

But the impression from a passage of talk needn't be, as in Mr. Digney's, one of emptiness. Words have a strangeness when sundered from things custom has affixed them to and combined in statements that make nonsense. But under the strangeness, binding a sequence of sentences, there may appear to be an underlayer of meaning. Bill Trisp is tall for sixteen, with a good-natured boy's grin. Now and then, when the mood comes, he'll be found walking with an uncertain sway, talkative, truculent, and reckless. Then he has to be put in a Continuous Bath, where he lies in constantly changing water at almost body heat. One day he wanted out of the tub, and these were his reasons: 'I want to do what's good for all of us. There's all sorts of things down here' (nodding down to the tub he lay in). 'There's coffee and cake and ice cream down here, and milk and jam in here. We don't need the baths any more. Bring them along on high chairs so that man doesn't have to slip and stand there. There's enough for everybody. If they open them, don't let the salt float through the bodies of our enemies. You know the one plan in the world who could help us. There's cocoa in the minds of the minds and the *kimes.* There's oranges in them magazines there. It's still

there. There's love ever in the names for men to fly. Dearly beloved, keep that place open for everybody. Bring back to the heart of everybody's love. There's power, power, wonder-working power. *Silvisali silikin, silvisali silikin. Giddy up, giddy up, geup.* Don't turn down the *straines alaine, straines alaine, straines alaine.* There's love for every kind of us. I want to do what's good for all of us. There's white in everything. . .'

He spoke this with a quiet fervor, and I felt beneath its odd nouns an almost evangelistic pleading. It's not a statement for the reason, but in the sense that rhythmic prose or music is non-symbolic, so is this: by its mere sound it carries across a mood, but no description.

It's not surprising then to find in some of Bill's talk changing rhythmical patterns with something in them of college yell, mass chant, and verse. Here is a sample:

Éverstir Éverstay, Éverstir Éverstay, Éverstir Éverstay
Istopay Éestopay, Istopay Éestopay, Istopay Éestopay
Stéeby, Stéeby, Stéeby, Stäyby, Stéeby Stéeby, Stéeby, Stäyby
Chéevy Chéevy Chéevy Chäyby, Chéevy Chéevy Chéevy, Chäyby
Stéevy Chéevy Chéevy Chäyvy, Stéevy Chéevy Chéevy Chäyvy
Bob Bob Bob Pub, Bob Bob Bob Pub
Bib Boob, Bib Boob
Bob Bib Boob, Bob Bib Boob, Bob Bib Boob
Mórees a Fórean, Mórees a Fórean, Mórees a Fórean
Colton Boy Champs, Colton Boy Champs
We're in the game, we're in the game, sixteen nothing
Názi Itémsah, Názi Itémsah, Názi Itémsah
Dr. Dafoe, Dr. Dafoe, Dr. Dafoe
I sink I go to sleep now
Good night folks, Good night folks, Good night folks
Christmas comes but once a year
So do not then have any fear
Fáde defáh, fáde defáh, fáde defáh

The mood I felt here—and it's a purely personal impression—is a carefree irresponsibility.

And irresponsible is perhaps a near description of much sick language. Many of the sick disown the need of conforming the structure of their speech to the structure of the events they speak of. A person can speak of events within his organism, if he declares them to be such, or he can speak of outer events as he sees them, and none can carp if in each case his language conforms in structure to the things he describes. But if he says there is jam in a bath when there isn't any, predicts an unlikely death which doesn't happen, and assumes people to be related when their hair is the same color, a discrepancy exists between his impressions (or at least the language from which we gather his impressions) and relations among things in the outer world as most of us find them. And a man who does this we call sick. Bill once called over from his tub, 'I've got to get out of here.'

'Why, Bill?'

'I've got a *pritistil* under my arm.'

'What's that, Bill?'

'I can't tell you—let me out and I'll show you.'

'I've never heard of a *pritistil.*'

'I want to get out.'

'But I can't let you out without an order.'

'I realize that, but I just want to go to bed—I'm tired.'

'But you were in bed, and you didn't sleep. Just try sleeping where you are, Bill.'

I left him then, for his flow of words

was artesian. What was plain was his wish to be taken out. Most of the rest was non-symbolic. For what was clearly from the sound of it a bristling mass of stiletto-like prickles, Paget himself couldn't have invented a word better than *pritistil*—but there wasn't one. When Bill said, 'I realize that,' he obviously didn't or he wouldn't have pressed his demand.

VII

Even a novel-reader knows that people who are in mental hospitals are queer talkers. But I know some outside that wind themselves around a cocoon of words, that resists facts that ask decision or change. They mightn't respond, as Matthew does, to *pray* and *farm;* but I can almost predict the reaction I can get from *Union Jack* or *Old Glory, mother* or *democracy.* That a given mother is a sadistic scold, or spends the food money buying clothes, is clouded out. Something would have to be done about those things, but nothing can be done about *'mother!'* but glow reverently. The war-laden self-interest or myopic arrogance that *Old Glory* or the *Union Jack* may cloak in a given case, if not purged, is at least unremembered; and political zealots rarely say if the *democracy* firing them to expression is Russian, British, Alabaman or Saskatchewan.

Paul's papers and his dangling straws must have brought him some emotional protection. The same that other people get from a safety deposit box full of bonds, from university degrees, from dangling shoulder cords, and from medicines, patent or not.

I have heard from pulpits and in other public places oratory hardly less magnificent than Peter's, and hardly more informative. And I meet a person every now and then whose views on the Jews remind me of Peter too. I have heard announcers on the air describe a difference between a brand of soap and competing ones, or between the soap as it was and as it now is. And yet for myself, one seems to wash my face as well and as long as the other. Like Bill's PRITISTIL, the words would stand for something very impressive, if they stood for anything.

I have met go-getters, as bent as Mr. Amble on getting things done, any kind of things. Doing, no matter what, was good; doing nothing, not only bad, but impossible. I have heard the rhythmic speech of groups or persons, almost as fascinating as Bill's chants, and as empty; and enunciation stately and perfectly molded, and as void of judgment as if Mr. Digney had said it, perhaps with intention, maybe not knowing.

And these I have met and heard in the world beyond the gates of the mental hospital; for in a world where few if any are in all ways healthy, many who are sick sit in places of mastery, and only the fringe are under care that show more than the normal measure of illness.

So it's only to be expected that we who care for those who are sicker should notice often in ourselves a less degree of the signs found in the patients. One morning a nurse exclaimed impatiently of Mr. Weeble: 'How can he go on wetting his bed like that—a grown man like him?' He was six foot three, it's true, but the fact alone that he wet his bed showed that he was not, in some important part of its meaning, a 'grown man.' She acted as if on the belief that 'grown man (Mr. Weeble)' was the same as 'grown man (Adolf Meyer, Einstein and others)'; and when the fact belied her she was annoyed, though had her belief been right, Mr. Weeble might have been bossing her instead of she him. The nurse, like Mr. Prin, had assumed that if one sense of a word applies to an event, everything else

the word means must also be equally true of the same event. Like nearly every statement about 'all men' or 'human nature,' the old proverb founders in a sea of exceptions, that

Men when old enough to wed
Never, never, piss in bed.

Louis Flicka said to me one day, 'Veazel eat blood, rabbit no eat blood. Elephant no eat what tiger eat. Some men good, some men bad—no can change. More bad men than good men.' He wouldn't admit, more than the nurse, that a man could be good in some ways (kindly, say, to his children), and bad in others (cruel, say, to his dog), or grown up in bony structure, but in making decisions and enduring what follows from them, still a child.

A restless patient provoked the emphatic remark that 'if he'd only be still, he wouldn't be so bad.' If these words were a judgment on the patient, the nurse could better have said 'if he weren't so bad, he'd be still'; but they conveyed instead her own inner state—annoyance.

Though Mr. Weeble affects me strongly, my feeling doesn't reach to expression in words. He speaks faintly, tearfully almost, costive in his words, each nearly forgot when the next comes: 'This —just—happened'; 'I—don't—know—how—I—got—here';—'I didn't—mean —to—be—smart.' And a common answer, even if I ask about his bowel movements, is 'I — just — want — to — go — home.' In his interims I dangle, the back of my neck tenses, paralysis runs a finger down my spine, sweat gathers on my forehead, and only with his last word can I sigh relaxed. Speech, if it came at such a time, would speak in another way to the same tension, little more.

VIII

My partner for a while was Fighting Tom Crunch. The nurse told him the other night that after she had given a hypo to Mr. Starey, Tom could let him out of the bath and put him to bed. 'So I asked him,' said Tom, 'if he'd be good if I let him out. Let's get this clear, I told him. I'm not afraid of you. If you want trouble, I'm right here waiting to give it to you. If you let a peep outta you, I won't bother usin' my fists; I'll just break the chair over your head. So when the nurse came with the hypo, she stood and stared, for there he was out of the bath, as good as could be.' The intention of Tom's words was not to describe an event or express a feeling, but to induce a reaction in the patient. It's against the rules, of course, to fight patients either by fists or words.

Giving form to events within (within the nervous system, within the psyche) is a function of speech for ill and well both.

In our work we have to interpret the words and the gestures of disturbance. 'Watch for it coming and get it before it comes,' Tom often said to me. We sat by the lamp one night at the Observation Ward, speaking in the semi-whisper that becomes habit. 'I've bin twenty years in this game,' he told me. 'I've bin in it so long, I kin just about figure 'em out by lookin' at 'em. I knew that Polock was a bad character. They kin be as nice as pie one moment, and the next they'll smash your head in.'

Mr. Rowley nodded as he passed us on his way to the Washroom. A pleasant, responsive chap I found him, often very helpful in times of difficulty. Fighting Tom's glance followed Rowley to the corner and then turned across the table to me. There was a glint in his glasses, lips were pressed thin, cheek bones glistered as the skin tautened, and his chin stood by to ram. The nearest corner of his mouth opened confidentially: 'There's another,' he said. 'Might blow

up at any time. I know the type. And Starey there—the moment he moves, we'll put him in the tub. I may be wrong but I don't trust him. When I spoke to him just now, there was a bit of a snigger to him I didn't like. Now he may be all right, and we may have no trouble.'

Twice in a night when I was off the ward, Mr. Weffels had left his bed, once to bang on the window pane, and once on the door. His intent, according to Tom, was to cut an artery. Next morning, looking up from collecting sputum and urine, bed-making, sweeping floors, counting the sharp utensils, there was the ward but no Mr. Weffels. I found him by the door, sulky-looking and aimless, but not banging. He leaped from his bed another day with a cry of 'murder.' He stood in the center of the ward, yelling. Then he made for the window. He was pounding the glass when I reached him, but to me more a spoiled noisy child than a suicide.

And Rowley and Weffels could be what both of us took them for or neither. Every man will blow up in some situations—even Tom; but it seemed unlikely to me that for Mr. Rowley these situations would arise in hospital. But words and acts have as many various meanings as there are persons to perceive them. For Mr. Amble *joke* includes throwing cups of tea on a lady's dress, or chopping down his brother's back steps. For me it doesn't. And we don't agree on the word *sane,* either. His elbows were on his knees, and he was looking at the paper in his hands, that he folded and refolded, as he told me of his uncle. He and his uncle had slept in the same bed for ten years, and his uncle would often dream of killing someone. 'He'd bang the bed so hard you's think he'd break it,' said Mr. Amble. 'But he was as nice a fellow as you could wish to see, and when you woke him up, he was as sane as I am.' (No wonder it's hard for Mr. Amble to stay in bed a-nights.) *The word 'sane' always includes ourselves, and the standard of sanity shifts with every speaker.*

We can only try to be ready when our predictions are corrected by the event; and we try to act as if dangerous meanings were the likeliest. The other day one of the doctors wrote a symbol that meant for him 'Sodium Bicarb. 30 grains.' The day nurse who read the symbol took it for 'Sodium Barb. 30 grains.' The result of the misinterpretation was an hour's work with a stomach pump for the doctor and the night nurse.

Fittingly, it was Fighting Tom who gave me a story of the faith men can bring to the meanings they impose on symbols. As Tom told it, he bent his tallness till his face was beneath mine, every bone, every crease, every glint in his golden rims tempting me to laughter. With his last word, his mouth cast the constraint of speech, and spread in laughter, and as his mood infected me, his hand clapped my shoulder. And this was what he told me:

> One morning an attendant got a specimen of urine. The dribble the man supplied wasn't sufficient for a test, so the attendant made it four ounces, pouring from a bottleful down from the female ward. When the doctor came to the patient on his daily visit, he was a little perturbed, and spoke with a firmness that feared a disbelief. 'It may sound odd to you,' he told the man, 'but you're going to have a baby.'

WANTED: MATURE MANAGERS

BENJAMIN M. SELEKMAN

[FOREWORD BY STUART CHASE: *This article by my friend, Ben Selekman, should appeal to everyone interested in semantics or in strikes. I happen to be interested in both. It seems to me a brilliant example of extensional thinking applied to labor problems.*

'An emotionally mature person,' says Mr. Selekman, 'is one who accepts unpleasant facts, whatever their genesis, as concrete situations to be handled rather than hated.' This, I submit, is something to crochet in four colors and hang on the wall.

Many managers in American industry, 1946, are hating rather than handling. Indeed they have been in a state of chronic emotional upset ever since the crash of 1929—what with depression, war, the Wagner Act, Social Security, sit-down strikes, the CIO, John Lewis, WPB and OPA. They feel they are not to blame for all these troubles. But somebody must be to blame. So they create a hierarchy of demons to be feared, hated, and if possible, punished — 'bureaucrats,' 'agitators,' 'new dealers,' 'reds,' 'impractical visionaries,' 'politicians'—

In the real space-time world there are no such demons. You would have little success in trying to photograph them. The managers' maps, accordingly, are incorrect. Trying to steer by them, they fall into deeper difficulties. They are practicing managerial immaturity, and have not faced the world of 1946.

The American business man usually thinks of himself as a realist. He is the chap who meets payrolls while others dream. Mr. Selekman drives a bulldozer through this cozy notion. 'Instead of accepting shop reality as an organic social whole of many material and non-material factors in interrelation, he partializes it into considerations of money, materials and machines, that are "real," even when they are difficult—and of men who are cussed and "unreasonable" when they are difficult.' Thus he becomes unrealistic on the level of action.

Nothing around the shop is more real than the people who work in it. Thus the manager leaves out the most important characteristic of successful management —the understanding of men. Mr. Selekman, as you will see, outlines the basis for such understanding.

It would be nice if every manager in the Republic, whether in business or in government, could get this thesis into his cortex.

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Disputes Investigation Act of Canada (1936), *etc.*

The present article is reprinted, with the permission of the author and the editors, from the Winter 1946 issue of Harvard Business Review. *Attention is called to a companion article by Professor Selekman in the Spring 1946 issue of the same journal, 'Wanted: Mature Labor Leaders.'*]

NEVER before have the men at the helm of industry needed for labor relations so steady a hand or so imperturbable a temper as now. Never before, to put it in a phrase, have industrial leaders been in such need of emotional maturity.

In the ranks of management such maturity is demanded from bench foremen to top executives; it is demanded not only of those who deal directly with personnel problems but of all who affect managerial decisions—of the treasurer and purchasing agent as much as of the plant superintendent and the personnel director. In the ranks of labor the same emotional maturity will stand in good stead the field representative and the headquarters official.

Nor can company executives wait for labor leaders to become emotionally mature; or labor leaders wait for company executives. Once more, as so often in industrial relationships, the patterns of feeling and action prove an intermeshing, interacting web of stimulus and response. True, the concrete daily content of mature behavior in labor relations will differ as between union official and management representative, since not only the sources of their authority but also the nature of their controlling ends and the character of the means by which they must pursue them differ. The demand that maturity thus makes today upon union officials is a topic into which we shall inquire on another occasion. For the present we shall examine specifically the need for emotionally mature managers and the contributions they can make to the development of sound industrial relations.

An emotionally mature person is one who accepts unpleasant facts, whatever their genesis, as concrete situations to be handled rather than hated. Accordingly, the mature manager avoids personalizing the developments that are distasteful to him, avoids ascribing responsibility for them to individuals who then can be blamed and fought and punished. He knows from hard experience, of course, that the men with whom he must deal from day to day often prove hard-hitting and gritty at best, unreasonable and unfair at worst. He acts upon the cool certainty that unpleasant developments need not by any means be accepted always as irresistible; that graceful compliance with everything his men may want, just because their wanting what they want is 'human,' hardly constitutes his sole recourse in present-day labor relations. Far from it. But in handling shop situations he recognizes difficult human behavior as simply another manifestation of reality, one more phenomenon in which given causes create the effects that become problems. Upon social and human, as upon technical, difficulties he does not make hasty judgments —nor moralistic ones; he remains analytical. He does not exhort and preach; he inquires. Above all, he knows that the reality facing him in shop relations invariably proves more complex than any explanation simple enough to satisfy his anger or his irritation.

Not only in business management but in all circles such maturity might well become an aspiration. Certainly it still represents a scarce commodity. Most of us—college professors, labor leaders, union

workers, dirt farmers, yes, and industrial executives—find it easy to believe that we miss our just dues because some other men with special privileges stand willfully and wrongly in our way. It cannot be denied, of course, that injustice and wrongdoing still occur in our imperfect world. And under stress and strain immediate satisfactions do come from yielding to the prime emotions: from striking back in anger at someone who is part of the difficult situation; from retreating into the reassuring approval of our own group; from denouncing and hating men who behave as they should not in terms of what we want of them. But it is even truer that, when the going gets rough for obtaining what we want, far more often than not the difficulties and frustration inhere in a complex situation of manifold, variously generated stresses and strains affecting those other men quite as much as they do us.

Because the very stresses that make maturity essential also make it difficult, the particular stresses under which management must carry on during the days ahead certainly constitute a test of the most exacting kind.

Provocative Context of Transition

It would be hard indeed to find a set of conditions more provocative than industry in transition. Historical turning points evoke the fears, the frustrations, the confusions that generate conflict rather than controlled readjustment. Quite manifestly these are times of profound disturbance and change—in ideas, codes, relationships, and the delicate balances of group power. For the past quarter century, indeed, American industry has stood at the center of a veritable succession of crises that became turning points. From the upheaval of World War I to the sharp struggle over union organization; from the false peace of the 1920's, in international and domestic relations alike, to the convulsions of world depression and ensuing social reform; from the cataclysm of World War II to the looming clashes over wages and employment—by now, it would seem, we should have learned how crisis-situations unleash aggressive conflict under the propulsion of powerful emotions and sentiments.

Nor can industry be done with the ferment of a crisis-situation even when the emergency itself has passed. Not only do the emotions stirred by the crisis often persist, but resulting social changes become instruments for articulating new dissatisfactions. The unions that gained recognition during the 1930's by toppling existing structures of shop relations in the turmoil of highly emotionalized campaigns stimulate the employee demands of these postwar 1940's. Reforms written on the statute books after prolonged debate and sharp struggle now become programs to be widened and improved, and so issues of further debate and new struggles. And if the focal issues of our postwar era have already been made clear, if management, labor, and government all accept the drive for rising living standards and adequate employment opportunities as the prime aspiration of our time, it is management that feels the mounting pressures even as we reconvert to peacetime production. It is management that confronts the task, beyond reconversion, of maintaining our demonstrated productive potential to assure abundance and security, within a world of flux and ferment and, so, of profound uncertainties.

Manifestly these are industrial problems of tremendous dimensions. 'External' forces as they all are—that is, external to the individual shop—they seem to transfer the focus of policy from indi-

vidual plants to the government. In sober fact they create responsibilities for shop management more direct and more comprehensive than its representatives themselves have yet appreciated.

Now and again management spokesmen may remind us that social programs become very practical problems of cost at the level where goods are actually turned out; that the continuously new regulations and interventions designed by outside critics remain scraps of paper until they are integrated into daily shop practice; that the shop administrator must still adjust to market conditions the production schedules through which America pursues the goal of abundance, must still meet the payrolls expanded by periodic demands for more wages and more jobs. True enough. But if industrial executives stop with these familiar reminders of costs, competition, and the like, they put too narrow a limit on their actual responsibility for administration. For they overlook an invariable medium—perhaps the most important medium — through which the largest social forces are transformed into immediate problems with which management must deal. They overlook the complex processes of interaction by which external stresses are 'internalized' to become the anxieties, sanctions, and expectancies conditioning the behavior of men at work.

This translation is precisely the one that a mature management must make. Industrial administrators must recognize how such broad, generalized factors as reconversion unemployment, veterans' seniority, reduced overtime, a labor government in Britain, a communist government in Russia, a New Deal government in Washington, all find their reflection in the feelings and conduct of the men and women working under their direction. Some of these factors generate exigent fears and anxieties; others yield social sanctions for the demands made to allay those anxieties; still others determine the forms of leadership that become either the reliance for satifying the sanctioned demands, or the target for hostility as obstruction in the way of new aspirations. As one form of our democratic leadership, management must give thought to its position in the terms of these psychosocial processes by which environmental pressures become individual fears and wants and the quest for new relationships.

INDIVIDUAL ANXIETIES. We need hardly dwell on the anxieties into which current industrial issues are transformed when they reach the individual worker and his family. The memories of depression experience remain vivid enough to render most Americans generally sensitive to the ominous connotations of employment uncertainties. What we do need always to remember is that for the American worker the national problem becomes a nervous, insistent personal question. Before reconversion, he asks, 'Will *I* have a job next month?' At the shutdown of a war plant he may face still another disturbing decision: 'Can I remain in this community, or must I move again?' The return to straight-time, lower paying civilian jobs spells painful personal readjustments for him. A household which had been running on a combined family income of $3,500, now must prepare to get along on, let us say, $1,500; the war worker portrayed in the demand for '52 hours' pay for 40 hours' work' is seeking to offset a drop of 30% in his weekly income.

At any level this process of reducing standards is a thing of stresses and strains, of fears and frustrations. And even though many workers during the early days of reconversion may shop around for jobs as good as the ones they enjoyed in

war plants, or take voluntary vacations before returning to work, the very shopping and waiting is spurred by this pervasively anxious sense of frustrating letdown. For the longer pull, the drive for full employment similarly represents for the wage earner a direct promise of steady work and so a chance for individual and family planning, something far more poignant than the national plans and employment budgets over which the policy-makers dispute.

Typically any threat of deprivation unloosens aggressiveness. It evokes angry, bitter emotions that propel the frustrated individual to the resistance best adapted to his resources in the situation. So it is that the worker, fearful of losing a well-paying job, a newly raised level of income, an improved mode of living, responds to the threatening shop development with resentment and hostility that engender ultimate resistance. Certainly, therefore, if external forces are 'internalized' as individual worries, strains, and pressures, the plant manager simply *must* deal with them through the behavior they evoke from his employees. For such behavior obstructs daily production.

COLLECTIVE AGGRESSIVENESS. The obstructions to production also are acquiring their typical forms. For the aggressions resulting from external threats of deprivation find their most frequent expression today in group activities. Collective aggressiveness furnishes increasingly the characteristic defense against threatened loss on the job, as well as the instrument of further advance; rugged individualism gives way, as it were, to 'rugged group-ism.'

Thus it is that powerful unions, with their roots firm in legal validation, now articulate and implement the protests and cravings of the anxious, clamorous men at the workbench. Through the unions, moreover, the great social currents of our time are internalized in still another way. They enter into sentiments and attitudes. They provide social sanctions for the increasingly dominant patterns of pursuing self-interest through collective aggressiveness. Union workers, for instance, who demand a 30% increase in wages on the threshold of reconversion are motivated by something more than the natural desire to support their families in the style to which wartime take-home has accustomed them; they also are convinced that only mass purchasing power can fully absorb the output of industry and so assure national prosperity.

Similarly, their pressure for measures guaranteeing full employment draws support from something more than the natural human craving for a secure and respected place in society. They press for these measures to defend private enterprise in a world where social systems as such are in competition with one another. The competition between private enterprise and state-controlled production, democracy and communism, individualism and totalitarianism, will be decided primarily by the answers each provides, or fails to provide, to this challenge of full employment. So, insistently, the spokesmen of 'the common man' warn us; and so most of us have come to agree. Just as the rugged individualist long has equated his own pursuit of self-interest with the general welfare, the rugged collectivists now are armored in the righteousness of their own social equations.

Thus all the unsettlement of this transition period seeps into the behavior of men at work. The hostilities of insecure workers, seeking ever higher returns from industry, become more aggressive as many different groups proclaim their demands as just and beneficent. Contrariwise, the most ardent affirmations of private man-

agement take on their undertones of defensiveness. Yet in every shop, management must produce goods and services through the labor of men responding to pervasive forces of this kind. Obviously, then, for effective management the administrator today requires, perhaps above all else, insight into the dynamics of human behavior. And a prime requisite for acquiring—and utilizing—such insight is the possession of emotional maturity.

Manager — Know Thyself!

First among the demands such maturity makes upon the individual administrator is the old injunction: 'Know thyself.' But in modern terms what does knowledge of self actually imply for the administrator? It implies recognition on his part that his behavior, like that of his employees, has its own dynamic motivations. He too acts under the spur of multiple drives, interests, ideas, and values. What he wants and what he does are conditioned by the same complex 'partly rational, partly emotional cultural setting' as are the aspirations and behavior of the men who cross him in the shop.[1] Accordingly, he too is reacting to the stresses of the times with his own anxieties and resentments.

THE FEARS AND ANXIETIES OF MANAGEMENT. Recall for a moment the typically upsetting situations confronting management in the turning points of recent years. Since the 1930's the union organizer has got his foot in the shop door, or has been persistently striving to get it there. Government, too, has thrust encroaching fingers into shop affairs, through continuing regulations and emergency controls. Plants that had to convert to war production, hiring in a tight labor market, training new workers, now are having to reconvert to peace production, laying off workers in a surplus labor market, weighing job claims of returning veterans and displaced war workers, retraining old workers. And all the time they have to keep a sharp eye on business competitors, rival unions, and government agencies.

Rare indeed has been the individual plant manager who has not felt from the start that each new interference with his wonted ways bodes him no good. His conviction of pending injury or harm may be fed by very real experience, both his own and that of other managers, or it may stem from sheer worries and suspicions. But whether well-grounded or not, it is his concern over what these pending developments may come to mean for him individually, over the prospect of harm or injury, that underlies the plant manager's basic reaction to the situation.

Here in essence is the human response to imposed change, but this time with management rather than employees on the receiving end.[2] As employees respond to production changes, the manager responds to broader economic and social changes. In him, too, the threat of injury to his way of working and living evokes typically the reaction of fear, followed by anger against those whom, logically or illogically, he holds responsible.

He fears the effects of union and government intervention upon his ability to maintain profits or, more specifically, his own individual earnings. He fears their encroachment upon his 'managerial prerogatives,' a generalized term describing

[1] Cf. Bronislaw Malinowski, *A Scientific Theory of Culture and other Essays* (Chapel Hill, University of North Carolina Press, 1944) Chapters I, V, and XI, pp. 3-6; 43-51; 120-131.

[2] See the author's article 'Resistance to Shop Changes,' in the *Harvard Business Review*, Vol. XXIV, No. 1 (Autumn, 1945), pp. 119-132.

the status and conditions of workmanship essential to skilled administrative functioning. He fears deterioration of his interpersonal relationships with others in the plant, particularly with the men over whom he must exercise continuing leadership. In other words, just as production changes threaten the security systems of employees, so changes introduced by unions and government shake the security systems of managerial officers.

And fear stimulates in management, again as in workers, the same forms of human response through action. Initially, the administrator too would wish above all to escape the imposition of these hated innovations—that is, in his case, to insulate his plant from the disturbing currents of challenge and change. But isolationism proves an even less feasible mode of escape in industrial affairs than it does in international affairs. Nor can the manager beat back the feared change by all-out fight against it. Just as the worker no longer finds it effective to express his resistance by overt destructiveness like machine-wrecking, so the manager can no longer use the same methods of fighting unpalatable interference that he used in the past. He still manifestly may indulge in a bit of 'machine-wrecking' of his own kind, by shutting down his plants in an angry gesture of outrage and retaliation. But he cannot escape from collective bargaining; wherever he may move, it is still the law of the land. Widening government responsibility in economic life represents a world-wide trend. The social equations of labor receive ever broadening popular assent. National sentiments themselves, to sum it up, have been changing; the changes thus initiated, moreover, are still working themselves out through a continuing series of similarly unpalatable change-situations, the end of which no one yet can foresee. The men who must face the stresses of turning out goods efficiently and profitably amid such conditions enjoy them no more than other men. They find plenty to fear and resent in looming developments. Understandably, they often are anxious, angry, and aghast.

AWARENESS OF FEELINGS AND SENTIMENTS. Consequently, as mature managers, their first concern for developing sound human relations through a time of crisis is the problem of what they must do with such feelings. As responsible leaders they must achieve their own controls; they cannot expect from the workers the same acceptance of management's normal anxieties that they, as management, must give to the equally normal anxieties of their employees.

A clue to the solution is afforded by the most dramatic experience of our day, the training of the greatest American armed forces of history. The soldier was explicitly prepared for the fear he would feel before and in combat.[3] He was counseled not to shrink from admitting he was afraid, not to believe that he was a coward because he felt what he did. Instead, he was to accept his fear as entirely normal response to a really dangerous situation. But he was not to act upon its initial impulse. He was not, for instance, to run away. Nor was he to dash headlong into the fight to demonstrate he was not afraid. Actually, so the soldier was taught, frank acceptance and understanding of fear might prove to be an instrument of survival. For fear helps prepare men for better defense. It makes them judiciously careful, willing to consider all the factors barring the way to a desired

[3] See, for instance, 'Psychology for the Fighting Man.' Reprinted from the *Infantry Journal* as Penguin Book S212, 1943 (prepared by National Research Council in collaboration with Science Service) pp. 296-306 and 345-365.

objective, and thus better able to find the appropriate means for moving toward the goal. They can then put their reliance on their own trained skills in utilizing those means. In other words, if fear is accepted and understood in terms of its causes, it can be controlled and used constructively.

If these principles afford guidance to the plant manager, it is pre-eminently because he too is faced with threats or challenges which evoke in him deep-seated fear and anger. But the manager's problems also take on social complexities that make them diverge widely from the clear-cut content of military danger. In sharp contrast to the alignment on the battlefield, the men facing each other in industry, even at the moments when they differ, belong in the larger sense to the same team. The men in conflict with the shop manager remain always the men with whom he must work to turn out goods. Yet the concrete shop policies precipitating the conflict—the layoffs of reconversion, the dismantling or installing of machines, the revision of schedules, necessary though they may be to meet pressing production objectives—threaten the equally pressing interests of the men in the shop. And in the conflict-situations which begin to take form as management and labor confront each other with their respective fears, both seeking to secure their respective interests, there seems to be no trained skills, like those on which the combat soldier is taught to rely, for finding the way out of danger.

The Sources of Unrest

Prerequisite to all else in human relations, then, the manager must learn to know himself, to understand his own emotional reactions to unpalatable developments, to accept his fears and angers as entirely natural responses to those situations, so that he can control them as influences upon his action. But when he has achieved such insights into the well-springs of his own behavior, he must next recognize that his employees' responses to these same stressful situations, even when they generate conflict, are equally normal. Seldom indeed does the plant manager proceed from such a premise. He does not, accordingly, accept the emotions animating his turbulent, restive workers objectively, as integral components of daily reality that must be handled dispassionately. Instead, with conclusive logic he established the 'unreasonable' character of the demands made by his workers. He looks for formulae to handle the specific exasperations of specific strikes and walkouts and slow-downs. He traces the 'irresponsibility' of union leadership and the incitements of 'agitator-types' in the shops.

Let it be granted at once that often the manager uncovers real and pressing problems. Demands often are unreasonable in the immediate context within which they must be met. Unions have not learned, as they must, to key their actions to their focal responsibility in our interdependent economy. In so large a cross section of our population as the workers, there inevitably are men with deep-seated personality difficulties who become troublemakers. But attention only to such abnormalities and maladjustments, even though such attention is required, will not yield sound labor relations. For none of them, nor all of them together, constitute the essential source of shop unrest.

The real motor-power behind shop conflict resides in the wants and drives, the feelings and sentiments, of the typical American worker. Perhaps 'typical American,' without the word 'worker,' describes the sources of industrial conflict still more accurately. For the workers after all belong to the same free, in-

dividualist American society of which their bosses too are citizens; the drives and aspirations of all of them are molded by its characteristic values and disciplines. The quest for ever higher wages belongs to the ambition to get on, to improve living standards, to give one's children better opportunities than their fathers enjoyed—all of which is sanctioned by the basic American creed.

But time and again when concrete demands for wage increases or job assignments or some other improvement must be denied, the manager seems irresistibly impelled to pass judgment upon the claimants as well as the claims. The factor that makes it difficult for even the most fair-minded, thoughtful administrator to see the normal motives behind vexing employee demands is his own consciousness of 'right' acting. The course he must take in the given situation seems the only possible course and ultimately the best course for all concerned. He tends therefore to juxtapose right technologic action (his own) against wrong human reaction (his employees').

A recent encounter of the author's revealed this common tendency with especial clarity, precisely because in many important aspects the company president concerned showed himself able to accept the exasperations of shop behaviour with mature objectivity. His company at the time was beginning reconversion. Almost at the outset the program was halted by an unauthorized stoppage. Condemnation of union officials and strikers alike was widespread, not only in the local community but in the press throughout the country. 'But,' commented this employer, 'perhaps we have no right to impatience. After all the British labor movement did not become responsible and sober overnight. They had their growing pains; and probably when our unions have been accepted as long and as completely as the British, they too will have more disciplined members.'

But when discussion moved to other phases of the reconversion problem, this fine objectivity gave way to moral indignation. Having shut down one of its war plants, the company was offering its workers jobs in another of its old prewar units. The men were refusing the jobs because they were not so desirable as those they had just lost, either in pay or conditions of work. With some feeling, and at some length, the manager condemned this refusal as 'wrong' and 'unreasonable.'

In such a case, management's recourses were of course bound by the exigencies of the reconversion situation. The plant had to be closed; peace-time job rates must reflect more rigorous considerations of cost than war work. All in all, therefore, the president of the company was quite 'human' in his disappointment that the workers showed no gratitude for the company's effort to offer at least some alternative employment. But it is equally human for men to recoil from the apparent necessity of downward readjustment; such readjustments take time precisely because they go against the grain of every vital interest of the worker and his family. That is why criticism of those who will not readily accept the lower-ranking, lower-paying jobs that become their only alternative to layoff, in terms of what they have 'no right' to refuse and of what they 'ought' to appreciate, cannot be argued —or administratively applied. For such criticism reflects feelings and 'principles'; it thus belongs to the realm of ethical valuation rather than of practical affairs. This same executive, moreover, would hardly expect anyone in his own circle of acquaintance to show agreeable compliance before the need for demotion or devaluation in position. Rather, he would

most probably deplore the lack of fight in such a fellow, 'licked from the start.'

In other words, human behavior in the economic realm must not be judged by a double standard of values. The leader must, as has been well said, 'be down-to-his-soles aware of "how it would feel" to be one of the led.' He must be able to 'feel into . . . the areas' not only of his own immediate competency but also 'those . . . which . . . are affected by [his] acts of master leadership.' He must know how the people thus affected feel, 'how the world looks to them, what *they* strive for, and what they think they strive for. He cannot be "dead" in certain parts of human relationships.'[4] Such understanding may not alter the action a plant manager must take, when the policies he initiates are conditioned by such inexorable imperatives as those of reconversion, for instance. But it does shape the manner in which the policies are presented; it does induce willingness to explore jointly ways and means for lightening their hurtful impact; it does promote ability to canvass actual demands and potential conflicts with the same objectivity, the same searching type of inquiry applied to technologic and financial problems.

DANGERS OF TRUNCATED REALISM. Certainly no requirement of leadership in our time is more crucial than this ability to 'feel oneself' into the employee's place when confronting him with the severe consequences—for him—of right and necessary technical policy. Yet the behavioral mechanisms by which plant managers actually insulate themselves from such shared feelings are deeply rooted. None perhaps yields a greater armored assurance than what we may term the cult of realism. Its adherents—and their number is legion—feel, as one of their eloquent spokesmen put it, that the engineers of business are 'the last of the realists'—because they alone understand in all its implications the hard reality that industry exists to turn out more and more goods at ever less cost; they alone recognize that industry must therefore embrace avidly every technologic device for labor-saving. He was scathing, this spokesman for business, about theoretical people like college professors and ministers who talked also of human consequences and the satisfactions of the men at work.

This kind of irritation with 'sentimentalities' is vented by the 'realists' in many guises—the whole way from the old familiar derogation of men 'who have never had to meet a payroll' to what seems to be a division of the factors of production into special new categories of the sacred and profane. Engineering and finance possess a sacrosanct quality that renders any challenge to their alleged mandates a kind of profanation. And the stubborn realities of human behavior that seem to get in the way of translating these mandates into action take on aspects of the 'wrong,' the 'unholy.'

This sort of realist is in truth not a realist at all. For what he does is to truncate the reality that is industry, excluding from the title deed of realism the very real human beings whom he must manage. Instead of accepting shop reality as an organic social whole of many material and nonmaterial factors in interrelation, he partializes it into the considerations of money, materials, and machines that are 'real' even when they are difficult, and of men who are cussed or unreasonable when *they* are difficult. Thus he becomes eminently unrealistic on the level of action, that is, as an administrator who must combine *all* the factors of production in the pursuit of his objectives. He identifies

[4] James S. Plant, 'Education for Leadership,' *ETC.*, II, 152-59 (Spring 1945).

his own thought processes with the impressive 'realism' of technology, just as he identifies his motivations with the impressive results in production.

RESPONSE TO TOTAL ENVIRONMENT. Thus we are brought once more to the vital requirement of maturity in labor relations. The administrator should possess precisely the capacity the pseudo-realist lacks, the capacity to respond objectively to the daily realities that constitute his *total* environment. And the totality of the environment is the strategic strand in the patterns of stimuli and response that yield characteristically mature behavior.

Our normal daily environment, in industry as everywhere, is more than material, more than pecuniary; it is above all human. Industrial man, too, despite the technology that dominates his workaday world, remains always a 'social animal,' and, whether as leader or follower, few indeed are the activities he pursues, the needs he satisfies, or the gratifications he obtains that do not involve him in relationships with other men. Manifestly therefore the emotions and attitudes of these other men, reacting within the same situations and to the same natural or material or cultural forces, become an integral part of the realities to which he must continuously accommodate himself.

The quality or characteristic mode of a man's accommodation marks the degree of his maturity. Although some men kick a machine that refuses to run for them or angrily break a test tube that does not yield the compound they are looking for, they usually feel foolish afterwards. And few leaders, certainly, ever vent on nonhuman factors in their daily problems their exasperation for the difficulties they face. But they do still, and widely, regard obstructive human behavior—obstructive of their own respective goals and wants in the situations involving obstructors and obstructed alike—with an indignation that leaves them feeling righteous and outraged rather than foolish.

It should not be surprising that many men in leadership positions, exhibiting truly astounding technical know-how, also exhibit this kind of emotional immaturity. Intelligence tests have familiarized us with the notion that chronologic age constitutes only one index of maturity. The index of intellectual age also fails to describe the whole individual. Instead we may now readily discern how any given man functions at any given time on quite a few different age levels—chronologic, biologic, mental, emotional, social.[5] About chronologic, biologic, or mental age the individual can do little himself; these largely 'happen' to him, as aspects of his native endowment. But fortunately each normal individual by his own conscious effort can modify, or can be helped to modify, his characteristic modes of response so that he develops the emotional and social maturity appropriate to the demands of the situations confronting him from day to day.

It is tremendously important that such maturity be achieved in industry, where its achievement obviously must begin with top, policy-making executives. For it is they who finally determine the policies by which each plant seeks adjustments to the evolving social developments that have such impact upon employee behavior. They thus set the tone of transition and so also the atmosphere of changing relations. They transmit down the line of authority the mold into which lower-ranking representatives cast and recast their approaches to human and social

[5] For a summary of current thought on this whole concept, see Read Bain, 'The Ages of Man,' *The American Sociological Review*, Vol. 10, No. 3 (June, 1945), pp. 337-343.

forces. And thus the achievement of emotional maturity at the top pervades the whole company.

Maturity in Collective Bargaining

Manifestly, an adult approach to these relationships must be spelled out in terms of actual functions. Consider, for instance, the crucial fact that employees today generally pursue their indivadual shop interests, as they conceive them, through group activities, through the formal institutionalism of union organization and the informal face-to-face associations of bench teams. The manager who accepts this reality of group behavior must accept it actively. Verbal acceptance of collective bargaining as the 'law of the land,' for instance, is not enough. It is not enough to recognize that 'unions are here to stay' unless that acceptance writes itself into behavior in every function which brings the shop administrator into dealings with union men.

For the mature administrator, in accepting a new social reality, even one distasteful to him, seeks to integrate it into his daily environment. He endeavors to make the collective bargaining he must accept actually work. His acceptance of union organization therefore is itself eminently functional. It is directed always toward the goal of sound dealings between management and men in daily shop affairs. It recognizes that every decision of shop policy, and so every managerial action, produces its consequences in employee reaction. These reactions in turn become motivations, emotional energizers —fears, suspicions, and hostilities or, it may be, reassurances, confidence, and mutualities—that shape dealings at the next stage of ceaselessly dynamic relationships. The mature administrator then remains always aware that collective dealings confront him not with a succession of detached episodes, each to be handled in the splendid isolation of its particular merits, but with a continuum of actions and reactions. He realizes certainly that each episode must be handled by its appropriate methods; but he realizes also that the way it is handled will affect the episodes to come in shop relationships just as past action leaves its unfailing impress upon each present episode.

ORGANIZATION. Thus even within today's patterns of legal validation one can almost differentiate by the quality of shop behavior the newly organized shop which has signed an agreement after a bitter organizing struggle from the shop where the agreement followed an election or membership count without resistance by the management. For example, within a short interval an arbitrator was asked to render decisions in two disputes, both of which constituted first arbitrations under a first agreement, with contrasting results as follows:

(1) In one case, management had for some years been 'running away' from the union. From its original home city in a Middle Atlantic state, it had moved southward, then returned again, only to back-track north all the way into New England, where it located first in a large metropolitan center and ultimately in a smaller industrial community. There the union finally caught up with it during the tumultuous organizing campaigns of the 1930's. Determined this time to make organization 'stick,' the union organizers directed an intensely aggressive campaign against this runaway employer. Employees were bitterly aroused; and, as so often happens, their feelings did not subside when the overt struggle gave way to the administration of the agreement. Indeed, even the first arbitration quickly became one more avenue for conflict, with employer demanding discharge of hostile

bench leaders, and employees exploding accusations of their management. Needless to say, the actual wage complaint proved a disguise for the underlying hostility. It required more than two years of combined union-management effort, with the help of the arbitrator, to stabilize relations in this company.

(2) In the other case, the contract had been negotiated after a membership count. Claims and counterclaims were amicably presented by union and management. It became clear that the wage issue also 'disguised' the discontent generated by the home problems of a newly wed employee and the series of unsatisfactory adjustments by which the individual concerned attempted to create a shop status consonant with her home needs. For the union the case became a chance to demonstrate to the uncertain membership what 'organization could do for them.' The employer, despite some initial perplexity, showed eventual insight into the varying drives generating the dispute and cooperated with union and arbitartor to deal as equably as possible with the 'aggrieved' employee. Settlement was achieved by mediation at the hearing itself.

NEGOTIATION. Negotiation, too, proceeds in the context of feelings and sentiments generated during the stage of organizing, and renegotiation in the context generated by administrative experience under the agreement that has terminated. The actual bargaining procedure, in its turn, unwinds its own chain of psycho-social consequences.

This does not mean that the mature manager engaged in negotiation will anxiously weigh each demand in terms of the aggressions denial may provoke. Negotiation has its skills and expectancies, and among seasoned negotiators each side knows the other is often ready to take less than is asked. But the angry, resentful, and so immaturely reacting administrator uses the techniques of negotiation for other purposes than achieving a bargain. He converts them into instruments of continuing conflict; he utilizes them to keep the union 'in its place,' a grudging, narrow place where the workers will find how little the new organization can do. Thus he seizes every immediate advantage he can wring from the party of the second part; he capitalizes on the unwary slip or oversight; he creates impossible burdens of enforcement and then denounces union irresponsibility. Again, the contrast between these approaches at the bargaining table may be brought home by two actual cases:

(1) The experience in one case arose from negotiation of a first agreement. The management involved accepted the union on the basis of a membership count. While no strike occurred, management had offered some resistance, and only after seven months was the first written contract concluded. The top executive of the plant found it difficult from the start to make his apparent acceptance actually functional in daily dealings. For understandable reasons he resented the union. His company had achieved through the century and more of its existence an enviable reputation for fair dealing with employees and customers alike. Though the wages paid its craftsmen were somewhat under the market rate, they enjoyed certain privileges: sick leave of two or three days in any work-week with no pay deduction (with half-pay for longer periods of sickness), an insurance plan, and particularly a work schedule that yielded them Saturday afternoons off.

During the war, however, as union wages rose, the employees began to crave the higher rates. The manager accepted the union's proof of majority mandate,

but smarted also under what seemed to him ingratitude and disloyalty on the part of his employees. When the union finally won acceptance of the standard agreement for the industry, the manager's resentment found a legal outlet. During the negotiating conferences he made no special request for the standard hours clause. But neither did he point out to the union that the prevailing division of the 40-hour week into 6 days would end the Saturday half-holiday in his shop.

Although the union eventually admitted its oversight, the manager made the more important discovery that employees do not easily relinquish long-established privileges. Very humanly, his workers wanted to retain their old Saturday half-holiday together with the newly won higher wage rates. Very humanly also, the plant manager was punishing their 'disloyalty' by insisting on literal application of the six-day work-week established in the agreement. He was soon startled by an insubordinate refusal to work Saturday afternoons, two wildcat stoppages led by an employee with eleven years of service, and consequent disruptions of his production schedules—none of which, needless to say, he wanted. To make matters worse, the manager discharged the man who had led the wildcat strike. In the resulting impasse both sides had to resort to arbitration. Thus in a situation where organizing disturbances had been averted and everything in the history of the company seemed to favor achievement of good union-management relationships, conflict was generated because the manager acted upon his own feelings and sentiments to 'get even' with the resented disturbers of established relationships.

(2) Exactly the opposite tactic, and so an adult approach, was pursued by a large-scale manufacturer in a basic industry during negotiations to renew an expired contract. Negotiations in this company usually were lengthy and tough-minded. Under jointly formulated rules either side could call for an adjournment at any time for the purpose of group conference. Another provision allowed either side to speak off the record at any time, although a stenographer made a verbatim transcript of the proceedings.

During the second day of the negotiations in question, the union spokesman made a proposal that the company representatives would have been eager to accept. But, after whispered comment, the manufacturing superintendent and the personnel director called for an adjournment. The latter pointed out to the union representative who had made the offer its implications for the union organization. 'What you proposed would be very much to our advantage,' the personnel director said in substance, 'but I doubt whether you and the other union leaders could live with it.' The union spokesman was brought up sharply. 'Did I really say that? What a boner!' When the meeting reconvened, the union leader asked the stenographer to expunge his statement from the record. He had meant, he said to the conference, to speak off the record. The stenographer inquired, according to the rules, whether management would consent. An affirmative nod was immediately forthcoming.

The following day the situation reversed itself. One of the management negotiators spoke out of turn, as sometimes happens in human affairs, to propose a considerable concession to the union. The personnel director waited anxiously to see whether the union would capitalize on this mistake. Much to his satisfaction, the union spokesman called for an adjournment. 'Did you realize what that fellow said?' he queried. 'I

surely did; what are *you* going to do?' was the reply. 'Well, we would very much like to have that offer, but we know that the management couldn't live with it. Anyhow, this is pay day, and we're paying off.' Thus when the meeting reconvened, the earlier exchanges were duplicated when management asked, with the consent of the union, that the record be expunged.

The labor relations executive narrated this experience later as a demonstration of the dividends yielded by fair dealing, which undoubtedly it was. But the demonstration had still deeper implications. It demonstrated also the values of the adult, mature approach in collective dealings. Management had acquired a very real respect for the officials of this union with which it dealt. It found them hard-hitting men, but also men who were generally fair and responsible. Accordingly, management did not want to chance weakening them with their members in any way by grasping an immediate bargaining advantage.

STRENGTHENING GOOD UNION LEADERSHIP. The need thus to 'feel oneself into the problems' of the union leader, as well as into the emotions of employees, was illustrated in still another way in a very different type of industry and company. This shop furnished machine wipers to war plants. Its own employees received the low earnings typical both in laundering and textile manufacture, the industries with which it was asociated. Their general wartime restiveness with substandard rates was accentuated by the high wages of war workers in the heavy industry plants their company serviced.

When the textile union of which they were members negotiated new contract rates, its officials were limited both by the wage levels of textile manufacture generally and the national wage-stabilization program. Accordingly, although they won two successive increases from the company, the rates, ranging for most employees from 38 cents to 50 cents per hour, were still very low in terms of wartime costs of living, employee expectancies, and earnings among other war workers. And the employees refused to endorse the contract granting the second increase but giving effect to the rates for a one-year term, despite the fact that it was accepted by the union leaders.

Management severely criticized the union officials involved. Yet against the existing currents of employee discontent and demands, the burden of enforcement placed upon the union proved simply impossible. As it was, the most responsible of the union stewards in the plant had to offset the formidable daily pressures through unremitting efforts to prevent wildcat strikes. Management could have strengthened these leaders by understanding the pressures from the ranks. It should have accepted an open wage clause conditional upon changes in national wage policy regarding substandard rates.

The concrete connotations of maturity in union-management relations, in a word then, can be derived only from the specific shop context in which action must be taken, precisely because it must remain always 'functional.' The mature executive keeps his eye steadily on his long-term objective, and tests each step in joint dealings by the consequences it will produce for the relationships he seeks. He may, and of course often will, face emotionally immature union leaders, which complicates his problem. But whenever possible, he strives functionally and actively to strengthen the effective union leader. What this may require of him in concrete policy, to repeat, will naturally vary with the particular situation in which he acts. In a negotiation he may face such

opportunities as just discussed. In handling grievances, in introducing changes, still different adjustments may be required.

In an industry like rayon manufacture, for instance, where the rate of technologic change is so high that it creates continuous problems of displacement, a mature management may write acceptance of this reality, and its human consequences, into the agreement, as the American Viscose Company has done by its pioneering provisions for joint definition of technologic change, for consultation upon each specific innovation, as well as for compensations to displaced employees through dismissal wages or transfer to other jobs.[6]

Even before the potentialities of a strike 'epidemic,' the mature approach offers essential emotional controls. Management—and also the publicists who influence popular opinion—may well recall that during our history we have experienced and survived many grave strikes and strike 'waves,' particularly after the upheaval of war. We may profit by sober appraisal of the actual dimensions of a strike wave like the current one. We may note realistically just how few of the more than 180 national unions functioning in our economy are conducting wage negotiations like military campaigns rather than conference-table give-and-take —with a beating of drums, an explosion of ultimata and pronunciamentoes that make headlines denied to less colorful regularity in bargaining procedure. Certainly the increased power of the unions and the mounting concern over steady production require determined inquiry into methods for promoting industrial peace. But in this, too, we shall make sounder progress to the degree that we persist in conceiving the need as a joint exploration rather than a punitive expedition.

This counsel of objective insight into, and reckoning with, human emotions and sentiments is not urged upon the shop administrator, it need hardly be said, as a form of anti-intellectualism. On the contrary, the extension of rational controls into ever further domains of social living remains the essential business of *homo sapiens*. But without an understanding of the wellsprings of human behavior, attempts at increasing rationality in social relationships prove stillborn.

Nor does the mature manager coddle his workers. A factory should never become a mental-hygiene clinic; its atmosphere must remain ordered, disciplined, and virile. An employee must stand on his performance; he must submit, just as do his supervisor and executive, to the characteristic system of law and order established in the shop—the authority of management and the constitutionalism rooted in the union agreement. In the shop community, as in society generally, the laws that exist above men constitute ultimately the safeguards of these individual men themselves. Accordingly, when we trace the code of solidarity and the emotions that make workers slow down production or display hostility, we do not thereby endorse the codes or the emotions. But neither will it avail us to denounce them.

The mature manager seeks rather to understand this negative behavior in order to rechannelize and direct it, to harness the energies unloosed by emotions and sentiments to the joint objectives of the shop. This again should not mean the manipulation or exploitation of emotions. Fascism abroad and demagoguery at home have sounded ample warnings against the

[6] 'Article XII, Technological Changes.' Agreement dated November 30, 1945, between American Viscose Corporation and Textile Workers Union of America.

danger of manipulating men. In the shop the goals of high productivity, human satisfactions, and stable realtionships, translated into joint concerns, become the sound outlets toward which the administrator directs shop policy in terms of its consequences in shop behavior.

Need for Training

Manifestly, then, we cannot look for the means of improving human relations in specific formulae or nostrums for handling now this difficulty and now that difficulty. The maturity we seek in our management group, from the foreman to the president of the company, demands patient and many-faceted attention. We cannot simply choose technically promising, 'natural' leaders and expect them without help to become effective administrators, both in line and staff positions. Nor can supervisory and executive training be any facile thing of copybook psychology or inspirational ballyhoo. We need insight into human behavior, into the forces that make both for conflict and for cooperation.

To advance such insight our schools of business and administration must prepare and offer truly professional courses drawing upon clinical material that gives appropriate emphasis to the human matrix in which policies are developed and introduced. Personality structures, individual and group behavior, the shop as a community wherein people agree and disagree, modes of acommodation, skills in building relationships — all these and more must be painstakingly examined as the determinants conditioning development of sound human relations.

The problems of administration are too critical, however, to wait upon the slow processes of training a new generation of administrators. Those now on the job who show a bent for leadership should be given leaves of absence for full-time attendance at such university courses—courses perhaps especially devised for such practical men, and planned within a time limit which will not make them prohibitive for the companies concerned. The training should then continue on the job, utilizing daily experience and problems as the anvil upon which to sharpen insight and skills. Ideally, a foreman should have at least as much training as a teacher, a superintendent or general manager as much as a physician. The shop should serve as the clinic where practice complements and tests university teaching, much as the hospital serves the educational program by which physicians are trained.

Conclusions

A large order? Perhaps. But the job of management in present-day industry is itself truly a large order—endlessly complex and difficult. The men who manage the contemporary economic institution which we call a company face problems as tough and as challenging as those confronting the most advanced of professions. Indeed, few professions today find their typical daily problems shaped by so portentous a range of influences as does industrial management. Unsettlement and the leftward drift of our time of change are variously 'internalized' by the people working under each shop administrator as anxieties, sentiments, ideas, and sanctions. These in turn find expression in demands and drives that continuously disturb shop equilibrium and are implemented by union organizations which are generally powerful, and often young and crude.

Yet difficult as is his task, the manager can hardly afford the luxury of retaliatory resentment. Instead, he must grant to the underlying motivations of workers who are always crossing him the validity that inheres in the aspiration to 'get on.' Ad-

ministration then becomes something more than separate handling of disjointed problems—of objective action to meet technologic difficulties and moralistic reaction to human ones. Administration becomes truly the management of a continuing flow of interrelated factors, mutually interactive, with technology impinging on behavior and with behavior impinging on technology.

CREATIVENESS

Once we begin to look for differences instead of similarities, it is practically impossible to retain intact, or at all, our generalizations, beliefs, assumptions, etc. It is almost impossible, that is, not to get new ideas. For the habit of asking 'How do these things differ?' or 'How might this be different?' is one of the basic techniques of originality or creativeness.

WENDELL JOHNSON, *People in Quandaries*

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UNDEFINED TERMS

The critical study of the foundations of mathematics during the nineteenth century made it abundantly clear that no science and, more generally, no intellectual discipline can define all the terms it uses without creating a vicious circle. To define a term means to reduce it to some more familiar component parts. Such a procedure obviously has a limit beyond which it cannot go. Most of us know what the color 'red' is. We can discuss this color with each other; we can wonder how much the red color contributes to the beauty of a sunset; we can make use of this common knowledge of the red color for a common purpose, such as directing traffic. But we cannot undertake to explain what the red color is to a person born color blind.

In the science of Dynamics motion is such a term, such an 'undefined' term, to use the technical expression for it. Dynamics does not propose to explain what motion is to anyone who does not know that already. Motion is one of its starting points, one of its undefined, or primitive, terms. This is its answer to the question: What is motion?

N. A. COURT, 'The Motionless Arrow,'
The Scientific Monthly, October, 1946.

☆ BOOK REVIEWS ☆

Burke's 'Grammar' *

A GRAMMAR OF MOTIVES, by Kenneth Burke. New York: Prentice-Hall. 530 pp. $5.

Whatever your view of the world, whether idealistic, mystical, materialistic, or just plain confused, insofar as you try to understand life at all, you will try in some way or other to say why people act as they do. Kenneth Burke in his *Grammar of Motives* is not concerned with choosing one or several explanations as better or worse than others. Instead, he is attempting an extraordinarily ambitious and difficult task: he is trying to show the 'basic forms of thought' which we necessarily employ in all ascriptions of human motives. These basic forms, he says, are 'equally present in systematically elaborated metaphysical structures, in legal judgments, in poetry and fiction, in political and scientific works, in news and in bits of gossip offered at random.' The examination of these forms and their changes constitute his 'grammar.'

In what is perhaps his most basic assertion, Burke says that language and thought are 'modes of action.' (The usual view is to regard 'thought' and 'action' as opposites.) He wants to give his readers a vocabulary, not to discuss human motives but to discuss the discussions, technically and analytically. He wants, in other words, not to fight in one of the intellectual armies (religious, pragmatist, Marxist, etc.) that are contending for supremacy; he wants rather to give a tactician's account of the kind of strategies the various armies employ.

The entire work, the author explains, is built around five terms: 'Any complete statement about motives will offer some kind of answers to these five questions: what was done [act], where and when it was done [scene], who did it [agent], how he did it [agency], and why [purpose].' Each of the five terms may serve as the 'ground,' or basic term, around which the others are arranged.

If I may oversimplify Burke's argument with a cooked-up example of my own, what I believe he is saying is something like this: Let us say that Joe killed Bill with a knife in a tavern. If we account for the act by saying 'Joe is a born killer,' or 'Joe comes from a family (or race) of hot-headed people,' we are using agent as the ground term. If we say 'That's what comes of going to taverns,' or, more broadly, 'That's what results from Joe's environment,' we are using scene as the ground term, as modern sociological (environmental) theories usually do. Or if we say, 'It was God's will,' the event is explained in terms of divine purpose. And so forth. Burke discovers in philosophies, plays, fiction, legal decisions, political arguments, folk sayings, market reports, and in every conceivable source, examples of what he terms the 'ratios' between 'scene' and 'agent,' between 'agency' and 'act,' etc., that constitute the variety of dramatic strategies with which we try to explain human behavior.

* Reprinted from Chicago Sun Book Week.

Burke's adventure in the explanation of explanations is not, however, as clear-cut and definite a task as I may have made it sound. The key terms constantly merge into one another, for reasons which he takes ample care to explain. Furthermore, he is so delicately sensitive (the majority of readers would say hypersensitive) to the ambiguities and shades of meaning in language that often, for dozens of pages at a time, one can only vaguely discern what he is talking about.

Reading Burke's book is a most unsettling experience. Two thirds of the time it is like watching someone picking invisible fleas out of a vast woolly shirt—fleas whose existence you can't quite believe in. No sooner are you in a swinish mood as the result of such performances than he starts throwing pearls at you—I warn the reader earnestly against overlooking them—for example, his detailed examination of 'money' as an all-pervasive 'god-term' into which our culture tries to translate all human motivation, his analysis of the symbolic (political) strategies of President Roosevelt, and his section on the functions of the federal Constitution.

What, in sum, are the achievements of this book? First of all, I should say that his 'dramatism,' that is, his explanation of all explanations as forms of human action, is an extremely valuable contribution to the discussion of the languages and symbolic strategies by means of which we account for ourselves and organize our energies as human beings. It makes possible innumerable perceptions not hitherto possible, and one is grateful for it in spite of the fact that one is somewhat puzzled as what to do with it. Secondly, his criticisms of scientific methods of thought show up the gaps which, while not necessarily intrinsic to science, still exist. (The gaps are revealed by the fact that the very word 'action' as in 'purposeful action' is difficult to fit into the conventional stimulus-response way of talking, wherein people do not 'act,' but simply 'react.')

But the full implications of all that Burke has to say, as well as the methodical statement of those implications, will have to await the appearance of a writer with the same concerns but with a somewhat less perversely wayward mind. True, without that waywardness, we should not have had the perceptions. But they remain to be ordered and arranged before others can hope to make use of them. Nevertheless, his basic method of procedure, which is founded on a complete recognition of the linguistic frameworks that govern human thought and action, sets a needed example in exploring a dimension that the majority of run-of-the-mill literary men and social thinkers have still to discover.

S. I. HAYAKAWA

The Disabled at Work

JOB PLACEMENT OF THE PHYSICALLY HANDICAPPED, by Clark D. Bridges. McGRAW-HILL. 329 pp. $3.50.

Although this book is advertised as being written for the physician, industrialist, and those concerned with the selection and placement of workers, it may be read with benefit by any person who ever has applied the term 'handicapped' to another being.

If it does nothing else for the non-technical reader, it will tend to give him a better understanding of physical limitations which come to all of us as our years increase. The objective of the author has been to furnish a guide to the task of placing people in proper, safe, and gainful jobs despite their so-called disabilities. In a careful and lucid exposition,

Mr. Bridges first convinces the reader that, 'the great majority of disabled persons have far more ability than disability.' Next, he sets forth an easily understood technique for evaluating jobs in terms of their demands upon workers and then evaluating the worker's physical abilities. In order to establish the latter part of the technique in a form understandable to the layman, Mr. Bridges has summarized in simple English the nature of the many common disabling disorders and defects of the human body. Each affliction is discussed in terms of its effect upon the afflicted one's abilities and in a positive rather than negative manner. Thus one learns that a medical pronouncement of 'endocarditis' or 'pneumoconiosis,' for example, need not imply the end of gainful employment.

The employer, industrial physician, safety specialist, social worker, or hygienist cannot afford to be without this book. It is also recommended reading for those who think of 'handicapped' people as only those with artificial eyes or limbs.

E. CLARK WOODWARD
Greater Chicago Safety Council

Flexible Therapy

PSYCHOANALYTIC THERAPY: PRINCIPLES AND APPLICATIONS, by Franz Alexander, M.D., Thomas M. French, M.D., and others. New York: Ronald Press, 1946. 366 pp. $5.

Perhaps you have wondered, as I have, how psychoanalytic therapy gets emotionally sick people well. The answer is that the patient-therapist relationship provides a reliving, under favorable circumstances, of the traumatic situation the patient could not handle in the past and which he now—by *corrective emotional experience*—successfully learns to manage.

The keystone of all etiologic psychotherapy is the relationship between patient and doctor. This is on two levels. Realistically the patient comes for help in overcoming unpleasant symptoms, and out of his superior knowledge the physician provides reassurance, explanation, emotional release and support, suggestion, and environmental manipulation. Some years ago analysts found the second level of therapy, for frequently the rational use of treatment was blocked by the patient's unfavorable feelings toward the doctor.

The patient 'transferred' to the physician emotions, both positive and negative, which previously he had felt toward a parent. This situation was called *transference*. How transference is controlled and its intensity manipulated in order to bring therapeutic success is the theme of this book. The transference is considered a new tabloid-size edition of an old conflict—thus it is irrational (not based on the extensional situation) and 'neurotic.'

The staff members of the Chicago Institute for Psychoanalysis who wrote this book look upon a 'neurosis' as 'the result of an interrupted learning process. . . . One learns from experience by correcting earlier patterns in the light of later events. When a problem becomes too disturbing to face this learning process is interrupted and subsequent attempts to solve this problem must assume the character of stereotyped repetitions of previous unsuccessful attempts to solve it.'

The task of therapy thus become *resumption of the learning process*. Only this time the patient is not a child—his reality-testing (extensionalization) and integrating functions are stronger. And this time, in the therapeutic situation, the analyst does not react as did the authoritative figure in the past, but displays ob-

jectivity and understanding.

The patient's transference behavior becomes 'one-sided shadow-boxing,' and the therapist can help the patient 'both to see intellectually and to *feel* the irrationality of his emotional reactions.'

The *differences* between the original conflict situation and the present treatment situation represent the 'secret of the therapeutic value of the analytic procedure.'

In psychotherapy intellectual insight is not enough. Therapy must get 'under the patient's skin.' This is what does happen when the patient is made aware of his transference reactions and is led to try more adult ways of adjusting. French writes:

'We are interested in the past as the source of these stereotyped behavior patterns, but our primary interest is in helping the patient find a solution for his present problems by correcting these unsuccessful patterns, helping him take account of the differences between present and past, and giving him repeated opportunity for actual efforts at readjustment within the transference situation. Then, when the patient attempts to put his new attitudes into practice in outside life, he will find they have become second-nature. Thus does psychotherapy indeed become a process of emotional reeducation.'

Considering the foregoing, we should note the agreement between general semantic formulations of 'neurosis' and psychotherapy, and those presented in this work. General semantics considers 'neuroses' (and other 'mental' ills) as identification reactions, current situations being confused in value with traumatic childhood experiences, and says that only organism-as-a-whole methods can substantially alleviate organism-as-a-whole disorders. Manipulation of the transference provides just such a psychosomatic therapy in which the patient comes to *feel* the differences between his past and present evaluational circumstances. (It would appear, however, that Korzybski was not aware of transference relationships.)

Not only have the members of the Institute provided new and exciting knowledge of analytic processes, but in their advancement have left behind much analytic jargon. The suspicion recurs that freudian terminology has often been a refuge for muddled thinking. Freud, as anyone knows who bothers to read him, was more readable than many of his followers.

Since the authors have an experimental outlook (and they remind us that Freud was a great experimentalist) and have presumed to modify traditional analytic technics, they will be the target of much polemic from traditionalists. This was probably anticipated, as they chose this statement from Newton to preface the book: 'A man must either resolve to put out nothing new, or to become a slave to defend it.'

The more flexible type of therapy advocated in this volume means that treatment will be tailored to the patient's needs, and standard psychoanalysis will become one form of analytic therapy among many.

There are 21 treatment cases described, and they spell out the details of the therapeutic formulations better than any words. Most are presented in a smooth and exciting fashion.

Because an accurate though elementary understanding of psychoanalysis is helpful in appreciating this book, and because for most of us psychoanalysis is a confused subject, I venture to suggest a few books which emphasize methodologic aspects and which I have found useful.

J. F. Brown's *Psychodynamics of Abnormal Behavior* (McGraw-Hill, 1940) is especially good on methodology. While wholeheartedly embracing freudian principles, it does criticize them on non-aristotelian grounds. Occasionally the discussion may be too condensed for easy understanding.

The Structure and Meaning of Psychoanalysis by William Healy and others (Knopf, 1930) can fill in any hiatuses. Actually it is two books. On one side is a systematic account of Freud's principles and theories in his own words, and on facing pages is an exposition and criticism of the material by psychologists of all schools.

An adequate chapter length summary of analytic formulations is given by Dr. French in *Personality and the Behavior Disorders,* edited by J. McV. Hunt (Ronald Press, 1944, 2 vols.).

Fascinating yet reliable accounts of analytic technics are presented in two novels: *The Spectacle of a Man,* by John Coignard [Alvan Barach, M.D.] (Duell, Sloan and Pearce, 1937), tells of the effect on a man's life of a standard psychoanalysis. *Wasteland,* by Jo Sinclair (Harpers, 1946), is about a man in a different kind of treatment relationship; I thought this a fine, competent novel.

Recently a definitive systematization of medical psychoanalysis has appeared in Otto Fenichel's *The Psychoanalytic Theory of Neurosis* (Norton, 1945), a work by an expert for experts and serious students. It presents the highest development of analytic terminology, yet I believe you will be pleased to know that it is permeated, in places, by a multicausal, non-dogmatic, organismal-environmental outlook.

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Babies' Bill of Rights

THE RIGHTS OF INFANTS: EARLY PSYCHOLOGICAL NEEDS AND THEIR SATISFACTION, by Margaret A. Ribble, M.D. Columbia University Press, 1943. 130 pp. $1.75.

This little book has a great deal of significant information about infants (birth to two years), but since it does not purport to be a 'baby book,' answers to all questions about infant care should not be expected. Neither does it allay (as a complete child-care book should do) all the anxieties it may arouse, so that it should be considered along with the personalized advice of a pediatrician and the generalized recommendations of a good book on baby care.[1]

'Unfortunately the idea is still disturbing to many people that mental life is so closely linked up with and so firmly rooted in other forms of primitive biological activity, such as sucking, breathing, and eliminating. These links between what is biological and what is psychological have never been made sufficiently clear.' Dr. Ribble, out of rich psychiatric experience and eight years study of 600 healthy newborn infants, 20 premature babies, and 100 expectant mothers, has attempted to describe these links.

Thirteen short chapters cover the topics of mothering, oxygen hunger, sucking, feeling, sleep, premental behavior, elimination, schedules, thwarting, emotional development, thinking, fathers (two pages), and mental health. Fathers may

[1] For instance, Dr. Benjamin Spock's *The Common Sense Book of Baby and Child Care* (Duell, Sloan and Pearce, 1946) has a thoroughgoing psychosomatic approach, and is sound, practical, and reassuring. It is also issued in a twenty-five cents edition under the title *The Pocket Book of Baby and Child Care* (Pocket Books, 1946). Also recommended are the books of Gesell, Aldrich, and Irma S. Black.

feel that two pages are too few. Since Dr. Ribble does not specifically state that 'mothering' can be performed by fathers as well as mothers, she appears to leave no role for fathers at all in the early months of an infant's life.

The child has not one but three hungers, acording to the author: food, oxygen and stimulus hunger. The last refers to a need for mothering and satisfaction of sucking and feeling wants. Without consistent mothering a baby has difficulty establishing its eating, breathing and eliminating patterns, and is handicapped in its ability to love and be loved.

Here are some representative findings:

'"Mothering" a newborn baby helps him to breathe by bringing into action certain nervous reflexes which insure proper and necessary respiration.'

'One mothering activity which is invariably overdone is that of diapering.'

'The tension of waiting [to be fed] is for a young baby an actual threat to the stability of his entire organism.'

'The ability to love [is] a highly complicated pattern of behavior, beginning physiologically at birth, when the first hungers are appeased by the mother, and developing psychologically in response to her presence and her care.'

'Particularly has breast feeding gone out of vogue, and mothers say with spirit that they are not going to be cows. They seem even to prefer to be dinosaurs.' [2]

'Breast feeding is of the very essence of "mothering" and the most important means of immunizing a baby against anxiety.' [3]

From deep clinical experience Dr. Ribble clearly and sharply demonstrates, perhaps for the first time, the *physiologic necessity* for mothering, and the extensive connections between satisfaction of stimulus hunger (her term), healthy psychosomatic functioning, and the ability to love.

Since this book is concerned with 'rights' of infants, the reviewer is constrained to remark that there are 'rights' of women, and mothering of the kind that Dr. Ribble advocates is time-consuming. With her emphasis on the psychosomatic welfare of the infant, Dr. Ribble appears to have ignored the mother's interests outside the nursery. Hence she gives no help with this phase of the mother's adjustment.

This book should be the subject of medically-led group discussions with young mothers and fathers all over the country. It should be read by all pediatricians, psychiatrists, and workers with infants. It might help us to raise that more mature generation that General Chisholm has declared we so decisively need. As Dr. Ribble says:

'If human nature is to be changed, if individuals are going to be more self-secure, more rich in their capacity to love, to think creatively, and to work through and solve problems of the world tomorrow, their early emotional [psychosomatic] hungers must be appeased.'

The potential contribution of this book to the *prevention* of psychosomatic disorders is tremendous.

LOUIS PAUL, M.D.

[2] Dr. Spock, however, writes: 'There are some women who just don't feel like nursing their babies—the idea goes against the grain. Should they try anyway? I think not.'

[3] Dr. Spock says: 'Mothers who read what psychologists and psychiatrists say about the importance of breast feeding sometimes get the idea that it has been shown that bottle-fed babies turn out to be less happy than breast-fed babies. Nobody has proved that.'

✯ FILM REVIEW ✯

THE FILM'S CONTRIBUTION to adjustment (we are more aware of its contribution to maladjustment) is closely related to the way in which the director—the abstractor-in-chief — abstracts from the objective level, the intention with which he does it, and the level at which he, the scenarist, the actors, or the others in the producing group have experienced the subject-matter.

'Documentary' is Grierson's word for the type of film he has done more than any other to develop. Robert Flaherty's approach to *Man of Aran* (British) was documentary. Before he shot any film, he lived nearly a year among the people of Aran. For nearly another year he did his shooting, alone. No one came on the screen but the people of Aran doing as they daily did. There was little formal story, but the ways and people of Aran came to us with anthropological detail, and the winds of Aran blew fresh in our faces.

'Story film' is conventional in construction, complies with the postulates of public taste and its persons are easily pigeon-holed. An extreme case is *When Tomorrow Comes* (John M. Stahl: USA) where a waitress and a foreign-sounding guest are attracted to one another. He proves to be a world-famous pianist with a mentally-ill wife. After an adventurous night together, she refuses to go to Europe with him as a paramour, and he leaves her with her dreams.

In *Scarlet Street* (Fritz Lang: USA), a pimp and a whore ruin a meek cashier with a nagging wife and some talent for painting, but there is greater observation of detail. The pile of unwashed dishes in the whore's room; the artist seen through his glass window so that the word CASHIER hovers over his head as the policemen climb the stairs; the bathroom where he paints, with tongue-and-groove wainscot, flowery wall-paper, oiled paper window, the bottle-crowded shelf on brackets; the trial told fully in one speech each from ten people: these are well observed, and the details are smoothly inter-

NOTE

This department on films, which appears for the first time in this issue, will appear regularly in ETC. if Adrian Young, who will have charge of it, is able to find time to go to enough movies. Readers are invited to contribute comments on films, reviews of pictures they have seen, and discussions of the opinions that appear in this department. To the general semanticist, films appear as powerful visual means of affecting human evaluations, for better or for worse. We hope that with the coöperation of readers this department will become one of the most useful in ETC.

—THE EDITORS.

locked. But it is too slick to be profound.

Some films seen during the quarter have been between these extremes. I had heard Dr. Howard Kershner of the American Friends Unit describe the starving condition of French children in Vichy France, and I had read of the work of the Swiss Fellowship of Reconciliation, one of several bodies bringing French children to Switzerland for three months each to restore their health; but up till *Marie-Louise* (Leopold Lindtberg: Swiss) no film that came to my notice had either grasped the situation or shown the fine work of the Swiss in meeting it. This film is said to be based on the actual experience of a twelve-year-old French girl during her three months. Her part is played by Josiane, a French refugee herself. An intention of active compassion and insight pervades the treatment that must have come from a strong-felt experience in the director himself. While the incidents are well-chosen to form a complete story, nothing of reality has been given up for polish.

Marie-Louise leaving her home amid falling plaster, flames, and sudden death for another city of soup-kitchens and desperate races for shelter before the bombs fell; and then her arrival at Lausanne station: 'She can't even laugh,' says one of the workers. The Ruegg family take her (the family she was to go to had measles). They were Protestant, so the Catholic maid, Paula, was given the task of hearing her prayers. One day she goes with the maid to the roof to hang out clothes. Paula goes in, closing the hatch after her. Three Swiss fighter-planes rise in a crescendo from the horizon. Marie-Louise goes frantic and is discovered in a coma, from which she is restored only by days of kind nursing by the two sisters and the father and Paula.

One of the workers in the Ruegg factory overcomes his fellow-workers' objections to working a quarter of an hour's overtime each shift, the money to go to establishing and maintaining a chalet for more French children. He then wins Ruegg's promise to double the sum. The montage of the first day's overtime, starting with a switch thrust up, continuing with wheels, hands, bales, bobbins, carders, looms, and lines of converging yarn (finely composed) have a swing of achievement, dissolving into the children singing along an Alpine path leading to the chalet hung with a board bearing the words, SOYEZ LES BIENVENUS. Banninger, a retired schoolmaster, is chosen to manage it.

At the end of three months, Ruegg cannot bear to send Marie-Louise back to starvation and danger. Banninger, however, persuades Ruegg that she must go back to her mother. On the train a countryman, learning who the children are, gives them the basket of apples he is carrying, and during the giving-out, Marie-Louise runs away. Brought back by a gendarme, she is sent to the chalet, for Ruegg and Banninger decide that the only way to avoid injury to her is not to send her till she herself decides to go. When it is time for the other children to go, she wishes to go back to her mother with them. As they leave, Banninger puts out the board—for the next children—SOYEZ LES BIENVENUS. A worthy expression of Switzerland, constructive in theme, well-directed and photographed.

In *The Last Chance*, from the same director and country, three escaping soldiers in Italy, two English and one American, become the guides and protectors of a group of refugees from the Nazis. They are at first unwilling, and then, as they come to know their companions better, devoted. If in *Scarlet Street* there is hardly a single person one could be drawn to,

here there is hardly a person one couldn't be drawn to. The various Italians that helped the soldiers escape, peasant girl washing clothes by the lake, the jovial waggoner; the Jewish tailor from Poland in flight for five years with his little niece, who reached Switzerland without him; the Viennese professor who said he had rather lose his life than his suitcase of manuscripts on *European Minority Problems Since 1815,* for which he had been collecting for thirty years—who reached Switzerland without his manuscripts but with his life and the hope to begin again; the German mother, whose husband had been taken from her by the Nazis and had tried to commit suicide, and her son, who gave up his life to distract attention from the refugee party after the German patrol overtook them.

The story may be fiction but the manner of handling it has many documentary elements. The three escaping soldiers were acted by English and American soldiers interned in Switzerland, who had acted little if at all before in their lives. Each spoke his own language, except where someone spoke two tongues, yet the polyglot dialog in French, Italian, German and English, was itself eloquent of the situation. Few printed titles were needed for understanding; this was largely because of the excellent visual treatment that made the situations very clear. The Italian girl that called, 'Inglese —Armistiso,' could not be misunderstood; nor the newspaper with the ARMISTISO headline lying crumpled on the road, and the close-up of the wheels of German troop-carriers running over a sign fallen from the wall, VIVA EL PACE. The significance of the open suit-case of manuscripts, its sheets lifted and eddied across the snows by mountain winds; of the American soldier singing *Frère Jacques* to an Italian boy using the English words, 'You are crazy' and each of the others joining in the tune with words of his own tongue; or the camera approaching the picture of Christ after the priest, who had helped many refugees on their way, had crossed himself and had gone away to the German guard awaiting him: these were beyond the need of any words, as good film is.

The same intention as in *Marie-Louise* brought the use of three natural types in the soldiers instead of professional actors, drew the subject closely from experiences of thousands, in typical persons whose conduct carried conviction.

The House in Ninety-Second Street (Henry Hathaway: USA) shows that Twentieth-Century-Fox isn't afraid to put actual events on the screen when they can be made into a quick-moving melodrama with enough tommy-guns and tear gas, finger-prints, concealed cameras, and spies to the hundred feet. All the FBI personnel shown in the film were those who had actually participated in the case, except the leading characters, played by Lloyd Nolan, Signe Hasso and William Eythe, who meant more at the box-office perhaps than objectivity. A worthy expression of America's film industry: action, nation against nation, man against man, and the stakes, life and death.

Like *The Last Chance, They Were Expendable* (John Ford: USA) does not reconstruct an actual event, but gives events and persons probably typical of many in the work of the Motor Torpedo Boats; and the male lead, the director, and the scenarist were members of the United States Naval Reserve. But the presence of Robert Montgomery, Donna Reed, and John Wayne makes it just another of their vehicles and gives the film the story-tale unreality with which Hollywood cannot escape investing even the truth. The unfamiliar actors of the Lindtberg films,

as well as the non-professional character of at least some of the cast, made for verisimilitude.

However, the matter carries further than merely not being known. Harry Watt, a documentary director trained by Grierson, and one whose work is among the best, wrote an account of his casting of *Nine Men* (British: 1942) in *Documentary News Letter* (Vol. IV, p. 179). This film was a plain tale of the enlisting, training, and first action of eight men, and their sergeant-major. None were stars, few had acted before in film. He says this: 'To carry parts in a story film of an hour or more needs experience . . . or the immense natural acting abilities . . . which are so rare that it can be discounted. Professional actors are therefore necessary. The job is to find those that are human beings and have not lost contact with life because of the necessarily artificial life they lead . . . The solution for this is not to allow our actors to segregate themselves. They must be made to mix with the people. They must be sent to live amongst miners if the film is about mines. They must know how to handle and fire a rifle if they are soldiers.'

Intention largely determines the methods of treatment. For Watt the realities of his subject are paramount. Most American commercial directors are compelled to keep 'entertainment' always in mind, this term standing for certain formulae for what the public 'wants' or has been conditioned to enjoy. To these formulae the realities of the subject tend to be conventionalized. It is usually independent financing that enables a director to escape from these formulae. *The Southerner* (Jean Renoir: USA) brought to the screen the conditions of life and the hazards of the share-cropper. *A Yank in London* (Herbert Wilcox: British) deals with the clichés of misunderstanding between British and American, and tends to show that surface differences make friendship more interesting when acquaintance has gone beyond them. The script was written jointly by a British and an American soldier; both the American parts are played by Americans, one a professional and the other a Pfc who had never been before a camera before; these points are earnests of the director's intention to contribute to international understanding. The differences in national character, free expression and reserve, and so on; the inherited prejudices about winning the war, war debts, phoney war; the feelings that the English weren't doing their bit, because they did it in a different way. In time the American is distinguishing between the Texan and Arizonan ways of rolling a cigaret ('more spit on it'), finding his socks darned by some unknown person, describing a baseball game; and the Englishwoman is jitterbugging in the Rainbow Club to a juke box. The American crashes his plane at the end to avoid the risk of hitting the village which has grown dear to him. Fiction, sentimental, but something beyond the common, because of the intention, the high-level abstraction the director strove to embody in the events he created, and the one or two steps he took to keep the manners of those portrayed close to the objective level.

The abstraction there came through fairly clearly, but often it seems to require expressed statement. Two films have made the psychoanalyst's couch familiar to the film-goer, after the lapse of a couple of years since *Lady in the Dark* (Mitchell Leisen: USA). They are *Spellbound* (Alfred Hitchcock: USA) and *The Seventh Veil* (Compton Bennett: British). In *Spellbound* Mr. Hitchcock was careful to have a psychiatric adviser, May E. Romm, M.D., to assure accurate

detail. Although the entertainment interest was never imperilled for a moment, in parts of the film some pains were taken to explain the reason for and the method of analysis. This, in conjunction with the case the film deals with, must have left some impression on the film-goer of the way a sense of guilt, repressed in childhood, can produce paranoid symptoms. Mr. Hitchcock in a thriller, and Mr. Bennett in a romance, both made the analyst's search for clues and his unearthing of a complex as exciting as any detective story.

Along the scale from documentary to escapist fiction, much depends on the director's intention whether the result will have adjustment value or not. The documentary director filming the daily life of a people cannot merely set his camera up and crank. He must observe, establish a viewpoint, select, and synthesize many days' shootings into a composite day (*Man of Aran*). In reconstructing the history of a past event, however full the account the director works from, there must be invention of detail, and nothing can be done exactly as it happened. But even here imagination can combine with documentary rigor (*Marie-Louise*). Where the reconstructed event is the composite experience of thousands, the typical must be given a form, a story must be invented, but it still can be so abstracted from real cases, given integrity of intention, as nearly to be documentary (*The Last Chance; Nine Men; The Southerner*). As the elements that form the staple of entertainment story pictures take a greater place (star actors, conventions of form, attitudes, speech, sex, gesture), the sense of reality lessens, the event is conventionalized, and from its likeness to so many others, probably has less effect in modifying the spectator's attitudes. (*The House in Ninety-Second Street; They Were Expendable; A Yank in London*). But at least these films were made with an eye to real events, in which some of those concerned in making the film had been participants. This exerted a control over the abstracting process, which must lend value to some of the detail, beyond that of more purely intensional creations. Where higher level abstractions are dealt with, like the theories of psychoanaylsis, this conventional approach may be somewhat offset by explicit elucidation of the abstractions dealt with. This is never as effective as a documentary approach to the subject-matter, and many will be quite unaware of the explanation. But for those who can absorb it, *Spellbound* shows that it can be done with no cost at all to the entertainment value.

And it is an advance that constructive service to humanity in need (the analysts of *The Seventh Veil* and *Spellbound*, the soldiers in *The Last Chance*, and they who served the children in *Marie-Louise*) is now and then shown to be every bit as exciting as the clash of egocentric men or nation-centered groups.

ADRIAN YOUNG

✯ CORRESPONDENCE ✯

War and Morality

SIRS: I can scarcely describe the depth of feeling with which I read the article 'Non-aristotelian Revision of Morality' in the spring issue of *ETC*. Ever since I began to read semantic literature—and my first adventure into the field was *Language in Action*—I have felt that semantics must ultimately and inevitably collide with the one big problem in our time—the field of established, sanctioned values which Hayakawa and G. B. Chisholm sum up under the heading of 'morality.' I have given years of study to this field—and I have come up with conclusions, which with some modifications are substantially the same as Chisholm's.

Some years ago I began to carry on a private, desultory study of semantics in the hope that I would thereby gain a greater insight into the problem in which I was primarily interested—the problem of war and its attendant morality. Not until the appearance of 'The Non-aristotelian Revision of Morality' have I found the field of my own researches tackled in semantic literature. For this I can hardly begin to express my gratification, made even greater by finding my own (tentative and lone) conclusions largely confirmed. My satisfaction is tempered only by my awareness that I have yet much to learn, both about general semantics and about the problem in which I am interested. I believe that there is much that general semantics can yet do in this field, but I do not pretend that I am able to point out where the path lies. I am convinced that the subject is of predominant importance, outdistancing all other problems, for it involves nothing less than the physical survival of our species. General semantics should bend all its efforts in this direction.

I have said that my conclusions are 'substantially' the same as General Chisholm's. The difference lies in a somewhat different treatment of the subject matter. Whereas Chisholm is primarily concerned (and this latter is based exclusively on the quoted passages in your article) with the neurotic character of the moral satisfaction of war, I feel that this neurotic aspect is only a single facet of the total moral and psychic complex of war and of the civilization that produces war. I have attempted, therefore, to take as the area of my study the total moral culture of our contemporary world and the relation of the war morality to this larger moral culture. 'Moral culture' is the term I use to denote the total complex of man's behavior and his beliefs about that behavior. Far from having achieved an exhaustive study of the question, however, I have made only a bold outline, for my interest has not centered exclusively on the details of the moral culture itself, but on the relation of the moral culture to those psychic-social forces in human society which have pro-

duced it and that part of it which is the war morality.

In my quest into the origin and development of morality I have found it convenient to distinguish between the individual conscience as a psychic or physiological mechanism and moral culture as a social development. I have found a number of psychic-social agents (though there are probably many others) responsible for the origin and development of contemporary morality. The factor mentioned by Chisholm, *i.e.,* the desire in humans to control and exploit one another, I regard as only one of a complex of causative factors of modern morality. Other contributory psychic-social causes of modern morality are:

1. The social instinct.

2. The development of the taboo, whose origin is unknown.

3. Man's failure to distinguish successfully between extensional facts and his own fancy.

4. The god-idea, probably the most important single psychic factor in the development of conscience and the moral culture.

5. The parent-child relation as the biological-social mechanism of conscience and culture transmission, and the complex motivations involved in it.

6. The relation of the family unit to the group, to the ruling classes in the group; the values of group loyalty and the parental responsibility for war in building such values.

7. The separation of personal from social morality, both in precept and practice, probably having its inception in the earliest class struggles and the beginnings of government, giving rise in our contemporary world to contradictions between the area of personal conduct and the area of national-political-economic behavior.

8. The neurotic or sadistic element in morality, especially conspicuous in group loyalty.

9. The dependence of all moral values, especially group loyalty values, upon social configurations, rather than the reverse.

In connection with the last factor, I wish to stress a point of difference between General Chisholm's thought and my own. Chisholm, in emphasizing the neurotic sense of guilt which 'we' attempt to relieve by making war, has, I feel, overlooked the fact that the sense of 'we-ness,' that individual feeling of being identified with a specific group of 'we's,' is in itself a phenomenon distinct from the neurotic sense of personal guilt. One has only to ask why the individual with a psychic load of personal guilt to bear (because of early sexual offenses, etc.) yet performs the additional psychic feat of identifying himself with a particular group, thereby shouldering the burden of group guilt.[1] Two, not one, psychic operations are involved for the individual in the war guilt neurosis. The individual guilt may merge with the group guilt in the individual's mental processes, but basically there are two operations. The answer is that ultimately the 'we' feeling proceeds from a fact—a psychic rather than a social one—the organizational fact that the two billion people of this earth are divided into about sixty separate, sovereign, competing nations. The fact of competitive group existence is all-important in making the conscience of the mod-

[1] The social fact that modern war is conscript war and is not voluntary qualifies this statement considerably, however. This fact is much neglected by our psychiatrists. I have given some thought to the impact of the coercive factor upon the individual in war. In my view this factor makes the Freudian diagnosis of war as a psychiatric problem only approximately correct.

ern individual what it is, in conditioning the chaotic moral culture of our contemporary world. It is difficult to believe that semantic reorientation alone can change moral culture and its accompanying neuroses as long as this basic organizational fact remains. I beg leave to quote a paragraph of my own stating my conclusions in this respect:

'We have already pointed out that moral ideas—especially in the corporate field—proceed from social configurations. That which people do they call "right." There can be little doubt that this applies with particular force to the moral values which underlie the patriotic loyalty. They are the product of organizational facts. Both Mill and Spencer and many others in formulating the individual's moral role in war, *i.e.*, his duty to defend his group in war, were responding unconsciously to the pressure upon moral concept of established social facts. In the course of the long, faltering evolution of human society from the single male and female and their children wandering alone in the primeval forest through the formation of clans and tribes and finally nations, the development of a complex of moral ideas revolving about the group in competitive relation with other groups was inevitable. The one astonishing feature of the growth of such a moral complex was its exclusion from the conscious, deliberate formulations of personal morality emanating from religion, and its ultimate, conscious formulation comparatively late in human history by secular thinkers (*i.e.*, Mill and Spencer). But the organic evolution of nations is not ended. The threat of atomic destruction has made that clear. The ultimate step in that evolution, the formation of a world society embracing the whole human species is very near. The old morality has stayed its time and must go. The inviolability of the unoffending individual as against organized society must be the ultimate goal toward which organized society must consciously bend itself. The right to choose his loyalties, the right to die of natural causes, must be recognized as among the inalienable rights of every child born upon this planet. These rights are unrealizable in a world of sovereign nations. Sovereignty must be sacrificed to the extent necessary to guarantee these rights universally to every individual.'

GEMMA SICA

Miami, Florida

'Jobs' and Production

SIRS: Mr. Hayakawa's excellent article entitled 'Additive and Non-additive' in the Autumn, 1945, issue was marred only by the newspaper item quoted without comment in a footnote. If it was intended merely as an example of additive thinking, its inclusion did no harm; but if it was intended as a horrible example of the misevaluations which additive-arithmetic-linear attitudes can cause, its inclusion was most unfortunate. Mr. Hayakawa himself admits that in certain situations additive thinking is justifiable, and it appears to me that the item quoted represents additive thinking in an area in which it produces a high degree of predictability.

The quotation says in part:

Eastern Air Lines has re-established the pre-war work week of 40 hours and raised 'take-home pay' to equal what has been paid for a 48-hour week. If every employer did the same thing, would anybody be better off? Not if every worker reduced his working time to 40 hours and maintained the same rate of hourly production. In that case everybody in the country would be 16.66 percent worse off. Because there

would be one sixth less goods and services produced.

For example, if in 48 hours a worker made 10 units an hour, he produced 480 units per week. If his hours are reduced to 40 and he maintains 'the same rate of hourly production' the number of units per week will drop to 400. If every employer did the same thing the number of units available for consumption in the United States as a whole would decline 16.66%.

'Would anybody be better off?' The words 'better off' have to be interpreted in the light of the context. In my opinion, the author meant that, since there would be fewer things produced, everybody in the country, as consumers, would have less items to consume. If that is what the author intended to convey, perhaps we should excuse him for overlooking the fact that a man whose working hours were reduced from 48 to 40 would have 8 hours more free time. Whether he would be 'better off' is a matter of opinion, for he might spend the time reading comics, going to the movies, betting on the horse races or studying philosophy.

The fallacy in the article is not in the arithmetic but in assuming that production will in actual fact decline in direct proportion to hours. It might decline more and it might decline less. No one can predict because too many other variables are involved.

This is borne out in some experiments in the field of industrial relations which offer extraordinarily revealing evidence that additive attitudes are not justified in human relations. These studies were conducted at the Hawthorne Works of the Western Electric Company in an effort to determine what effect variations in illumination intensity would have on productivity. After extended research it was found that more light resulted in more production in the test group, but in contrast to what was anticipated, production of the control group, whose illumination remained constant, also increased and the per cent increase was approximately the same for each group! When the test group's light was reduced below the original amount, production again increased, but so did that of the control group and again by about the same per cent!

The report of the test states, 'The efficiency of this department increased more or less consistently throughout the test but not as a sole function of illumination,' and that 'the difference in efficiency of the two groups was so small as to be less than the probable error of the values.' [1] Variations of these tests were tried three different times in an effort to eliminate outside variables (or perhaps to prove the researchers' preconceived notions about light and production) but in every case either more light or less light resulted in more production until finally 'when the level of the illumination for the test group finally reached three foot-candles, the operators protested, saying that they were hardly able to see what they were doing and the production rate was decreased. The operators could and did maintain their efficiency to this point in spite of the discomfort and the handicap of insufficient illumination.'

These experiments have been interpreted in many ways. One interpretation is that they merely prove that it is very difficult to observe humans without their realizing it and that this factor of interest in the worker and his conditions is alone sufficient to nullify a change in illumination, thereby providing another

[1] C. E. Snow, 'Discussion of the Relation of Illumination Intensity to Productivity Efficiency,' *The Technical Engineering News*, 1927.

interesting example of the effect the observer has on the observed.

These and other experiments have been reported and evaluated in *Management and the Worker*,[2] a non-aristotelian book written by authors familiar with general semantics, which should interest all students interested in industrial relations.

> The notion that a simple change in working conditions would be followed by a simple response in output, apart from the attitude of the workers toward the change, was consequently abandoned. In this statement there is, of course, no implication alterations in environment produce no alterations in response. It means that in the situations studied at Hawthorne the attitude of the workers was such an important variable that those changes in working conditions which were introduced did not produce by themselves any predictable effect capable of measurement in terms of output.[3]

While this is a better example of the necessity for non-linear attitudes in dealing with humans, it does not solve the problem posed in the quotation in Mr. Hayakawa's article. This problem arises from the current widespread identification of symbols with things. If people would not confuse money, which is a symbol, with things, which are not symbols, it would be apparent that if everyone's income in dollars should be doubled overnight, we would not be any 'better off' in consumable units of things, and that if everyone worked fewer hours without an increase in hourly output, we would be worse off. A dollar is just as much a symbol as a ration stamp, and confusion results whenever the relations between dollars and things are in rapid process of change. We have seen the difficulties which accompany the issuance of more sugar ration stamps than there is sugar, *i.e.*, of more calls on units than there are units. We are in a similar position in respect to 'greenback calls' on things, if a government continues to issue more and more calls without a corresponding increase in the volume of goods. Although small deficits for a brief period can and have been offset by increased production of things, never in economic history has a prolonged period of substantial deficits failed to be followed by rising prices.

General semantics teaches that certain consequences flow from a given way of speaking and that if the way of speaking is changed, vastly different consequences can flow from the languages used. The emphasis currently placed on symbols produces some peculiar results. We hear a great deal of nonsense about 'purchasing power' and 'jobs' and about 'full employment' and whether it is possible. Full employment of a sort is well within our grasp. We can make 137,000,000 rakes, give one to each American and can print enough bonds and/or currency to pay him a daily wage (in fact even double it every six months to maintain 'purchasing power'). We can have two (or ten) locomotive engineers in each cab; legislation can require that each plumber have two (or ten) assistants instead of one, and eventually I presume an elevator operators' union can be formed which would require four operators in each elevator (this would be done, of course, for the sake of 'safety' and 'spreading employment'); we could look forward to a thirty-hour week or perhaps even a twenty, ten or five-hour week. Under such circumstances everyone would have a 'job,' plenty of 'purchasing power,' and we would have 'full employment,' all of

[2] F. J. Rothlisberger and William J. Dickson, *Management and the Worker*, Cambridge, Mass., 1939.

[3] *Ibid.*, p. 572.

which are symbols. The only trouble is that we might not have anything to eat or sleep under or ride in or wear.

If instead of placing the emphasis on the symbols 'full employment' of '60 million jobs' or 'purchasing power,' we placed it on producing and distributing with least expenditure of man-hours and with the least possible damage to man the greatest amount of useful and desired things, and on getting these into the hands of the people who need them and will use them, entirely different results would be forthcoming. Productive and distributive efficiency would become paramount, the unions would insist upon the installation of labor-saving equipment and would request employers to discharge anyone who repeatedly failed to use safety devices, and people with easy jobs could be encouraged to work 45 to 50 hours and those with extremely difficult jobs could reasonably claim greater efficiency if they worked only 30 hours; for example, an office receptionist could be considered in the first category, and a coal miner in the second. Business management would have the responsibility of seeing either that prices were reduced to reflect greater efficiency and volume production or that employees were given more calls to offset the greater volume of goods.

If we were more aware of this difference betwen a 'job' and production, we would be more emphatic in demanding that everyone, even including the three-odd millions of people engaged in government, should do a full day's productive work. We would have no patience whatever with featherbedding in the railroad unions, with stand-by musicians in the orchestra pit and idle scene-changers in the wings obtaining pay (calls on things) despite the fact that the play has neither music nor scene changes, etc., etc.

It may have been some of these things that the author of the editorial quoted in Mr. Hayakawa's article intended to say.

W. BENTON HARRISON, JR.
New York, N. Y.

Actor and Role

SIRS: The degree to which a certain portion of the public insists on confusing actors with the roles they play (*i.e.*, symbols with things symbolized) is again illustrated in the following excerpt from the theatrical magazine, *Variety:*

'Hollywood, March 26. "I can't be Father Kelly and own a racetrack too. It causes too much criticism." That's the reported explanation of Bing Crosby for his desire to sell is majority interest in the Delmar track in California.'

P. D. HAAK
Dodd, Indiana

✯ NEWS AND MISCELLANY ✯

Iowa City Chapter Report

The Iowa City Chapter of the Society for General Semantics was established in March, 1946. The membership has consisted chiefly of students and faculty members of the State University of Iowa. The chapter was divided into a discussion group and a research group. These met bi-weekly, and members could attend either or both.

As a result of meetings of the research group the following research program was outlined:

I. Definition and Measurement of the Aristotelian Personality

(1) A consideration of the various 'personality' characteristics in the general semanticist's formulations of 'aristotelian' behavior (*e.g.*, 'rigidity,' 'allness,' 'unconsciousness of projection,' etc.).

(2) The extent to which these behavioral characteristics are approachable in terms of existing clinical measures of personality (the Rorschach, Thematic Apperception Test, etc.). To what extent may existing clinical procedures be of value to general semantics?

(3) In terms of the above considerations, the development of specific 'operational' definitions of the various aspects of what the general semanticist wishes to consider the 'aristotelian' personality.

II. Measures of Language Behavior

(1) A consideration of the problems of non-aristotelian education and re-education for both the child and the adult. This might include the following steps:

(a) Analysis of present methods in the home, schools, and colleges. Critical evaluation of teachers' manuals, workbooks, etc., as used in the elementary school, the curriculum common in high schools and colleges, in terms of the fundamental principles of general semantics.

(b) The development of a set of general procedures and specific 'nonverbal' exercises which could be used by the parent or teacher, which might be applicable to the clinic. These exercises should be aimed at developing a non-aristotelian orientation by methods which *show* what is meant rather than by simple verbal exposition.

(c) Writing (perhaps rewriting) a manual incorporating the above studies —a manual which could be used by the school teacher, parent, and clinician.

Progress made thus far in pursuing this program of research has consisted of an evaluation of the Yensen 'allness' test, and a consideration of the personality characteristic of 'rigidity' in preparation for constructing a test of extent of rigidity.

Since March, 1946, a committee selected from members of the chapter has edited the newsletter, *Quote*$_n$.

Respectfully submitted,

Oliver Bloodstein,
Secretary.

IGS at Lakeville Conn.

The 1946 summer seminar and workshop of the Institute of General Semantics was held at Indian Mountain School, Lakeville, Connecticut. Among the visiting lecturers and the workshop were DR. O. R. BONTRAGER, DR. DOUGLAS M. KELLEY, MR. ALLEN WALKER READ, and MR. GUTHRIE JANSSEN.

New headquarters of the Institute of General Semantics have been established at Lakeville, Salisbury Township, Connecticut, with ALFRED KORZYBSKI, M. KENDIG, and C. SCHUCHARDT in residence there. Correspondence with the Institute and members of its staff should be addressed to Lakeville, Connecticut.

The eighth annual Holiday Intensive Seminar in General Semantics will be conducted by Alfred Korzybski at Lakeville, from December 27 through January 2. Application blanks and further information about courses, accommodations, and travel directions may be obtained by M. Kendig, educational director of the Institute.

News from Boston Chapter

The newly formed Boston Society for General Semantics plans fortnightly meetings during the winter season. The meetings are held at Phillips Brooks Hall in Harvard Yard, Cambridge, Massachusetts, and the members are principally students and younger faculty members from Harvard, Radcliffe, Wellesley, Boston University, and neighboring institutions.

DR. STEWART W. HOLMES, DR. WALTER H. COMMONS, PROFESSOR CLYDE CLUCKHOHN, and PROFESSOR GEORGE K. ZIPF are among those who have spoken before this group recently. BENJAMIN B. CROCKER is president of the chapter; PAUL C. RICHTER is secretary. Information about further programs may be obtained from Mr. Crocker, 314 Marlboro Street, Boston 16, Massachusetts.

News from Sydney, Australia

One of our most active chapters is that in Sydney, Australia, at the Australian Psychology Centre, 296 Pitt Street, Sydney. An energetic program of lectures, demonstrations, and discussions, and the publication of a mimeographed newsletter keeps the chapter busy almost every night in the week. A substantial library on semantics, general semantics, psychology, and philosophy has been accumulated. The Sydney chapter also sent in the materials for *Quote*$_{14}$, which were assembled and prepared for publication by the Iowa City chapter. The president of the Sydney chapter is MR. FRANK FOUNTAIN; the secretary, MRS. SHEILA WILEY. Among those lecturing on general semantics are MR. E. O. HAES, MR. M. EDWARDS, MISS M. CURRIE, MR. ESCH.

The Australian Psychology Centre was first established as a child guidance clinic, an activity which led naturally to the guidance of parents. Before the study of general semantics was introduced to the group (see *ETC.*, II, 243-245, Summer 1945), the principal sources of psychological inspiration were Freud and Jung. As Mr. Haes reports: 'Our previous studies of Freud and Jung, augmented by extensional re-education, now seem to many of us to assume parts of an ordered plan, as though we had been working toward a non-aristotelian system in an unformulated, intuitional way. . . . Apparently we have not produced any new knowledge or made any contributions to the subject of our interest, but it is now becoming clearer in what field we have been leading the way. It is the making

use of available psychologic knowledge by ordinary people in their living.'

Items

A new chapter of the Society is in process of formation among undergraduates and graduate students at the University of Chicago. . . . Also at the University of Kansas, Lawrence, Kansas. . . . DR. JOHN J. KESSLER, 6639 University Drive, St. Louis 5, Missouri, requests that persons in the St. Louis area interested in starting a chapter of the Society get in touch with him. . . . The Reading Clinic at Temple University (Philadelphia) under the direction of PROFESSOR EMMETT A. BETTS announces a program of annual institutes in which 'for 1947 the emphasis will be placed on the general language approach to the reading problem; for 1948, the content area approach; for 1949, the semantic, or meaning, approach.'

Born, to DR. and MRS. S. I. HAYAKAWA (MARGEDANT PETERS, editor, *Co-op News;* associate editor, *Poetry: A Magazine of Verse*), on July 16, 1946, a son, ALAN ROMER.

Chicago Lecture Series

MR. THURMAN W. ARNOLD, author of *The Symbols of Government* and *The Folklore of Capitalism* and distinguished jurist, will be the opening speaker in the annual lecture series of the Society of General Semantics in Chicago.

DRS. HUGH G. and LILLIAN R. LIEBER, co-authors of *The Education of T. C. Mits, The Einstein Theory of Relativity,* etc., will also appear in the series. Other speakers in the series will be PROFESSORS WENDELL JOHNSON, IRVING J. LEE, ANATOL RAPOPORT, and S. I. HAYAKAWA. The lectures will be given at Thorne Hall, on the Chicago campus of Northwestern University. MR. REX A. WICKLAND is chairman of the lecture committee. Further information about the series may be obtained from the Executive Secretary of the Society, MISS ELIZABETH GLENN, 3300 Federal Street, Chicago 16.

New Constitution and By-Laws

The new constitution and by-laws of the Society for General Semantics, prepared by a committee consisting of DR. IRVING J. LEE, MESSRS. VICTOR RUBIN, CHARLES KLUSS, KARL G. HAUCH, and DR. C. B. CONGDON, was submitted to the membership for approval. As of November 15, the deadline for the return of ballots, 371 members had voted for approval, 9 against. A printed copy of the new constitution and by-laws is being prepared for distribution to the membership.

Back Issues

Orders are now being taken for bound copies of *ETC.*, Volume III, which will be obtainable from the Society ($5). Orders for bound copies of Volumes I and II continue to come in. The supply of Volume I is exhausted; there are very few left of Volume II.

Since the Society is growing rapidly the demand for early volumes of *ETC.* seems likely to grow rather than to diminish. Suggestions from members regarding either the cheap reproduction or the financing of the reproduction of earlier volumes will be extremely welcome.

Almost all back issues of *Quote*$_{II}$ are still available. Old and new members who do not have a complete file are invited to let us know what issues they lack. The Society will be glad to send free of charge as many of the missing issues as possible while the supply lasts.

Pasadena Chapter Report

The decision on the part of a group of eleven families to apply for recognition as the Pasadena chapter of the Society for General Semantics was made at a meeting held at the home of MR. ROBERT L. READ, 1295 Roanoke Road, San Marino, California. Mr. Read was elected chairman and MR. G. E. LAWRENCE, secretary.

The following were the programs of the monthly meetings during the 1945-46 season: November 30, DR. and MRS. H. E. SCARBOROUGH, 'Psychosomatics and Problem Children'; December 15, motion pictures: 'The Electron' and 'Colloids'; January 26, MISS ELSIE SMITHIES, 'Preventive Guidance'; February 23, MR. DONALD MCLEAN, 'General Semantics and Marital Problems'; March 23, MR. ROBERT L. READ, 'Maps and Children'; April 27, MR. PARKE DOWD, 'The Hiroshima Bomb'; June 7, DR. DOUGLAS GORDON CAMPBELL, 'Neorological Foundations of General Semantics'; June 29, MR. PETER CHARLTON, 'World Federalists.'

In addition to monthly meetings, study group meetings under the chairmanship of Mr. Read were held during the past year each Tuesday evening, from 7:30 to 9:30 p.m., in room 202, Dabney Hall, on the campus of California Institute of Technology.

The Pasadena chapter also sponsored, in August 1946, two groups of introductory lectures on general semantics by PROFESSOR FRANCIS P. CHISHOLM, of the Department of English, River Falls (Wis.) State Teachers College. These lectures were held at Occidental College.

The present officers of the chapter, elected in July 1946, are MR. WALTER MILLAR, chairman; MR. HARRY L. WARREN, secretary. Information about future chapter programs may be obtained from Mr. Warren, 1512 Beech Street, South Pasadena, California.

Aid to Sociology

In the September-October, 1946, issue of *Sociology and Social Research* EDWARD JOSEPH SHOBEN, JR., of the University of Southern California, writes:

'General semantics focuses attention sharply on the phenomenon of communication as basic to all social processes, thus defining a special and crucial field for sociological investigation, the results of which may throw considerable light into some of the darker recesses of social interaction as it occurs on the cultural level. Likewise, general semantics, concerned primarily with symbolic behavior and symbol-object relationships, provides at least a starting point for the more thorough-going examination of the cultural nature of man. It has been pointed out on many occasions that his capacity for tool- and symbol-using is the characteristic that permits man to live culturally, but until recently there have been no techniques for inquiring into the functioning and malfunctioning of man's symbolic activity. Finally, general semantics may accelerate the growth of sociology into truly scientific status by making explicit the applicability of an inductive scientific to social data.'

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(Signed) S. I. Hayakawa, *Editor*

Sworn to [illegible] L. Rush, notary public in and for Cook county, Illinois, August [illegible], 1948.